

FCC PART 15.407

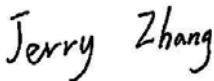
TEST REPORT

For

ZIONCOM ELECTRONICS (SHENZHEN) LTD.

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Shajing Street, Baoan District, Shenzhen, China

FCC ID: X7DWL0306

Report Type: Original Report	Product Name: AC650 Wireless Dual Band USB Adapter
Report Number:	<u>RDG171206016-00B</u>
Report Date:	<u>2017-12-22</u>
Reviewed By:	Jerry Zhang EMC Manager 
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Note: This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. (Dongguan).

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

EUT Name:	AC650 Wireless Dual Band USB Adapter
EUT Model:	A650UA
Multiple Models:	WL0306
FCC ID:	X7DWL0306
Rated Input Voltage:	DC 5V from USB port
External Dimension:	Length (24.8cm)*Width (1.7cm)*High (1.3cm)
Serial Number:	171206016
EUT Received Date:	2017.12.06

Note: The series product, models A650UA, WL0306 are electrically identical, the differences between them just the model name for marketing purpose, we selected A650UA for full test, and please refer to the declaration letter for details.

Objective

This type approval report is prepared on behalf of **ZIONCOM ELECTRONICS (SHENZHEN) LTD.** in accordance with Part 2-Subpart J, Part 15-Subparts A, and E of the Federal Communications Commission's rules.

The tests were performed in order to determine compliance with FCC Rules Part 15, Subpart E, section 15.203, 15.205, 15.207, 15.209 and 15.407 rules.

Related Submittal(s)/Grant(s)

FCC Part 15C DTS submissions with FCC ID: X7DWL0306.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices. And KDB 789033 D02 General U-NII Test Procedures New Rules v02r01

All emissions measurement was performed and Bay Area Compliance Laboratories Corp. (Dongguan).

Measurement Uncertainty

Parameter	Measurement Uncertainty
Occupied Channel Bandwidth	±5 %
RF output power, conducted	±0.61dB
Power Spectral Density, conducted	±0.61 dB
Unwanted Emissions, radiated	30M~200MHz: 4.58 dB for Horizontal, 4.59 dB for Vertical 200M~1GHz: 4.83 dB for Horizontal, 5.85 dB for Vertical 1G~6GHz: 4.45 dB, 6G~40GHz: 5.23 dB
Unwanted Emissions,conducted	±1.5 dB
Temperature	±1 °C
Humidity	±5%
DC and low frequency voltages	±0.4%
Duty Cycle	1%
AC Power Lines Conducted Emission	3.12 dB (150 kHz to 30 MHz)

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.69 Pulongcun, Puxinhu Industry Area, Tangxia, Dongguan, Guangdong, China

Bay Area Compliance Laboratories Corp. (Dongguan) has been accredited to ISO/IEC 17025 by CNAS(Lab code: L5662). And accredited to ISO/IEC 17025 by NVLAP(Test Laboratory Accreditation Certificate Number 500069-0), the FCC Designation No. CN5002 under the KDB 974614 D01.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 273710. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

Bay Area Compliance Laboratories Corp. (Dongguan) was registered with ISED Canada under ISED Canada Registration Number 3062D.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The EUT was configured for testing in an engineering mode which was provided by the manufacturer.

The system support 802.11a/n ht20/n ht40/ac vht20/ac vht40/ac vht80, the vh20/vht40 were reduced since the identical parameters with 802.11n ht20 and ht40.

For 5150~5250 MHz band, 7 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	44	5220
38	5190	46	5230
40	5200	48	5240
42	5210	/	/

802.11a, 802.11n ht20 were tested with Channel 36, 40 and 48,
802.11n ht40 were tested with Channel 38 and 46.
802.11ac80 mode was tested with channel 42

For 5725~5850MHz band, 8 channels are provided to testing:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	157	5785
151	5755	159	5795
153	5765	161	5805
155	5775	165	5825

802.11a, 802.11n ht20 were tested with Channel 149, 157 and 165,
802.11n ht40 were tested with Channel 151 and 159.
802.11ac80 mode was tested with channel 155.

EUT Exercise Software

The software “MPTOOL” was used for testing, which was provided by manufacturer. The worst-case data rates are determined to be as follows for each mode based upon investigations by measuring the average power and PSD across all data rates bandwidths, and modulations. The maximum power was configured as below table, that provided by the manufacturer:

5150-5250MHz:

Test Mode	Test Software Version	MPTOOL		
802.11a	Test Frequency	5180MHz	5200MHz	5240MHz
	Data Rate	6Mbps	6Mbps	6Mbps
	Power Level Setting	43	42	42
802.11n ht20	Test Frequency	5180MHz	5200MHz	5240MHz
	Data Rate	MCS0	MCS0	MCS0
	Power Level Setting	43	42	42
802.11n ht40	Test Frequency	5190MHz	/	5230MHz
	Data Rate	MCS0	/	MCS0
	Power Level Setting	44	/	43
802.11ac80	Test Frequency	/	5210MHz	/
	Data Rate	/	MCS0	/
	Power Level Setting	/	44	/

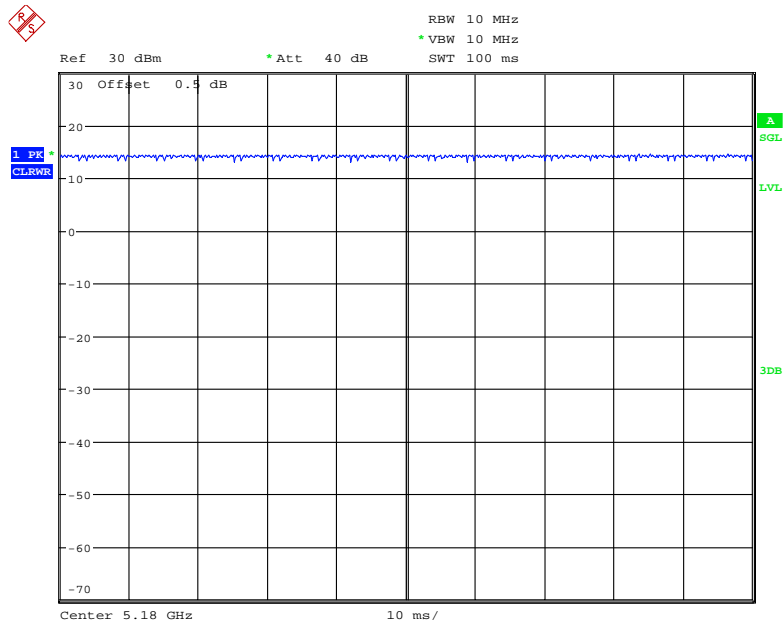
5725-5850MHz:

Test Mode	Test Software Version	MPTOOL		
802.11a	Test Frequency	5745MHz	5785MHz	5825MHz
	Data Rate	6Mbps	6Mbps	6Mbps
	Power Level Setting	34	33	33
802.11n ht20	Test Frequency	5745MHz	5785MHz	5825MHz
	Data Rate	MCS0	MCS0	MCS0
	Power Level Setting	34	33	33
802.11n ht40	Test Frequency	5755MHz	/	5795MHz
	Data Rate	MCS0	/	MCS0
	Power Level Setting	34	/	33
802.11ac80	Test Frequency	/	5775MHz	/
	Data Rate	/	MCS0	/
	Power Level Setting	/	35	/

The duty cycle as below:

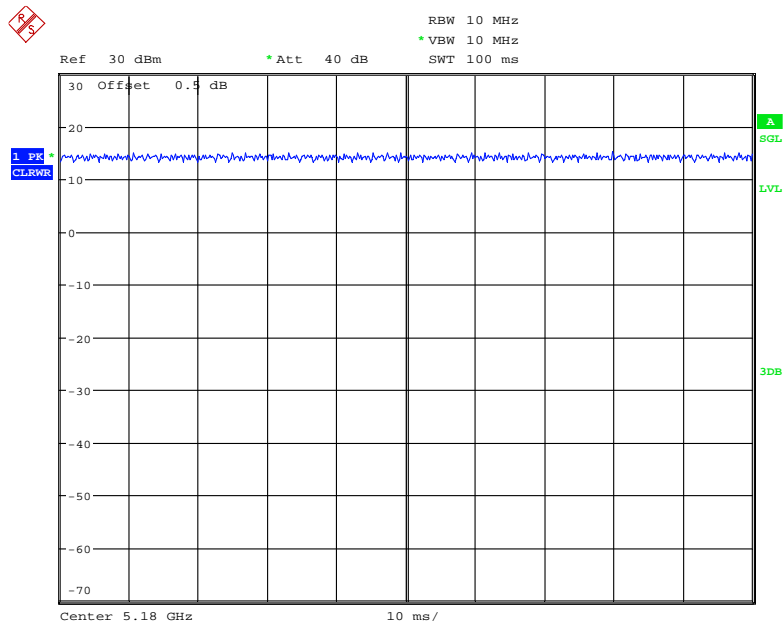
Mode	T _{on} (ms)	T _{on+off} (ms)	Duty Cycle (%)
802.11a	100	100	100
802.11n ht20	100	100	100
802.11n ht40	100	100	100
802.11ac80	100	100	100

802.11a mode



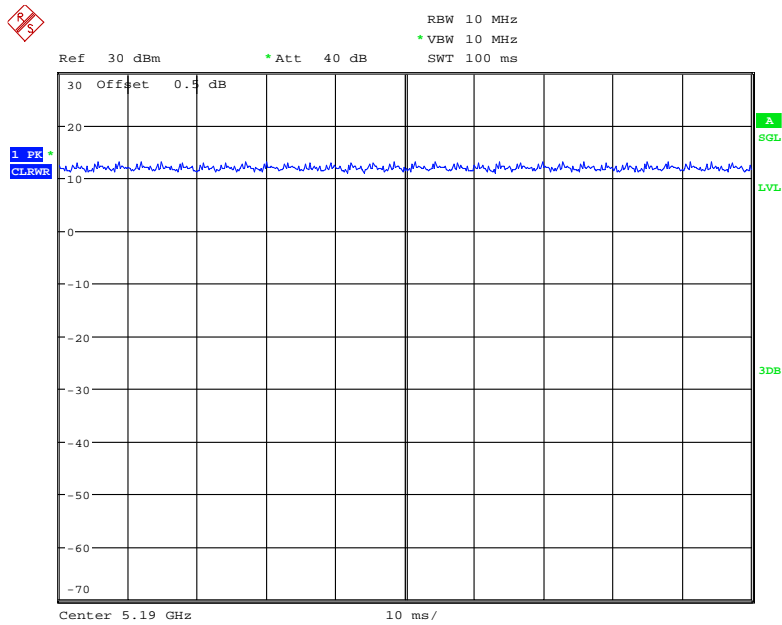
Date: 16.DEC.2017 17:34:04

802.11n ht20 mode



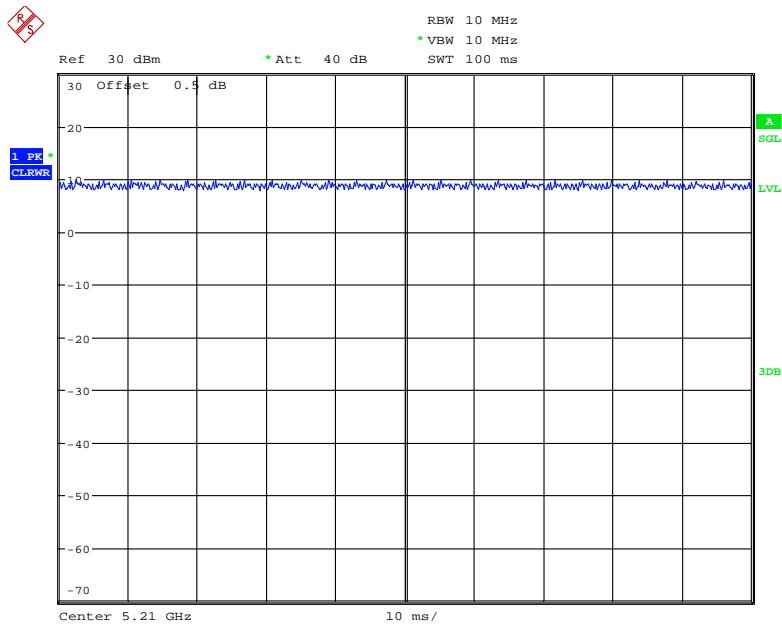
Date: 16.DEC.2017 17:35:05

802.11n ht40 mode



Date: 16.DEC.2017 17:36:02

802.11ac80 mode



Date: 16.DEC.2017 17:37:23

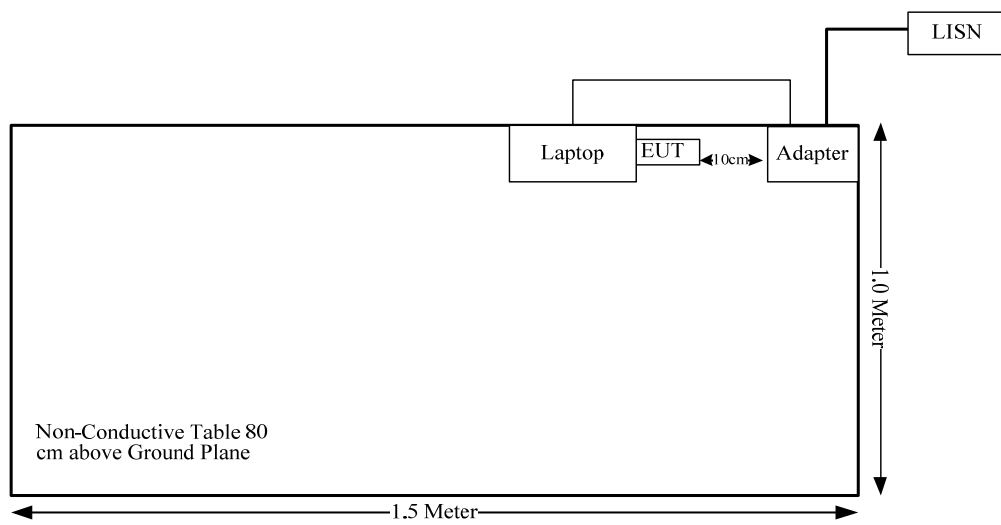
Equipment Modifications

No modification was made to the EUT.

Local Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
DELL	Laptop	PP11L	QDS-BRCM1017

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§15.407 (f) & §1.1310 & §2.1093	RF Exposure	Compliance
§15.203	Antenna Requirement	Compliance
§15.407(b)(6)& §15.207(a)	Conducted Emissions	Compliance
§15.205& §15.209 &§15.407(b)	Undesirable Emission& Restricted Bands	Compliance
§15.407(b)	Out Of Band Emissions	Compliance
§15.407(a) (e)	Emission Bandwidth	Compliance
§15.407(g)	Frequency Stability	Compliance
§15.407(a)	Conducted Transmitter Output Power	Compliance
§15.407 (a)	Power Spectral Density	Compliance

FCC §15.407 (f) & §1.1310 & §2.1093- RF EXPOSURE

Applicable Standard

According to §15.407(f) and §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

According to KDB447498 D01 General RF Exposure Guidance v06:

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$ for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

- $f(\text{GHz})$ is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison
- 3.0 and 7.5 are referred to as the numeric thresholds in the step 2 below

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm according to 5) in section 4.1 is applied to determine SAR test exclusion.

Measurement Result

The max conducted power including tune-up tolerance is 7.5 dBm (5.62 mW).

$[(\text{max. power of channel, mW})/(\text{min. test separation distance, mm})][\sqrt{f(\text{GHz})}]$
 $= 5.62/5 \cdot (\sqrt{5.825}) = 2.7 < 3.0$

Note: 2.4GHz and 5GHz can't transmitting simultaneously.

So the stand-alone SAR evaluation is not necessary.

FCC §15.203 – ANTENNA REQUIREMENT

Applicable Standard

According to § 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

And according to FCC 47 CFR section 15.407 (a)(1), if transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Antenna Connector Construction

The EUT have an external antenna for 2.4G Band and 5G band permanently attached to the unit, the antenna gain is 5dBi in 2.4G and 5G band. Please refer to the EUT photo.

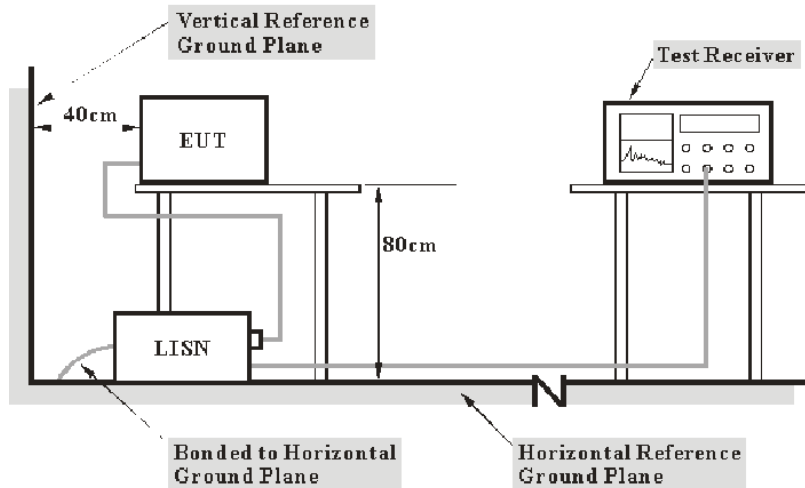
Result: Compliance.

FCC §15.407 (b) (6) §15.207 (a) – CONDUCTED EMISSIONS

Applicable Standard

FCC §15.207(a), §15.407(b) (6).

EUT Setup



- Note: 1. Support units were connected to second LISN.
 2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 limits.

The spacing between the peripherals was 10 cm.

The adapter was connected to the main lisn with a 120 V/60 Hz AC power source.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

$$V_C = V_R + A_C + VDF$$

$$C_f = A_C + VDF$$

Herein,

V_C (cord. Reading): corrected voltage amplitude

V_R : reading voltage amplitude

A_C : attenuation caused by cable loss

VDF: voltage division factor of AMN

C_f : Correction Factor

The “**Margin**” column of the following data tables indicates the degree of compliance within the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCS 30	830245/006	2017-12-11	2018-12-11
R&S	L.I.S.N	ESH2-Z5	892107/021	2017-09-25	2018-09-25
R&S	Two-line V-network	ENV 216	101614	2017-12-08	2018-12-08
R&S	Test Software	EMC32	Version8.53.0	N/A	N/A
N/A	Coaxial Cable	C-NJNJ-50	C-0200-01	2017-09-05	2018-09-05

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Procedure

During the conducted emission test, the adapter was connected to the first LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

Test Data

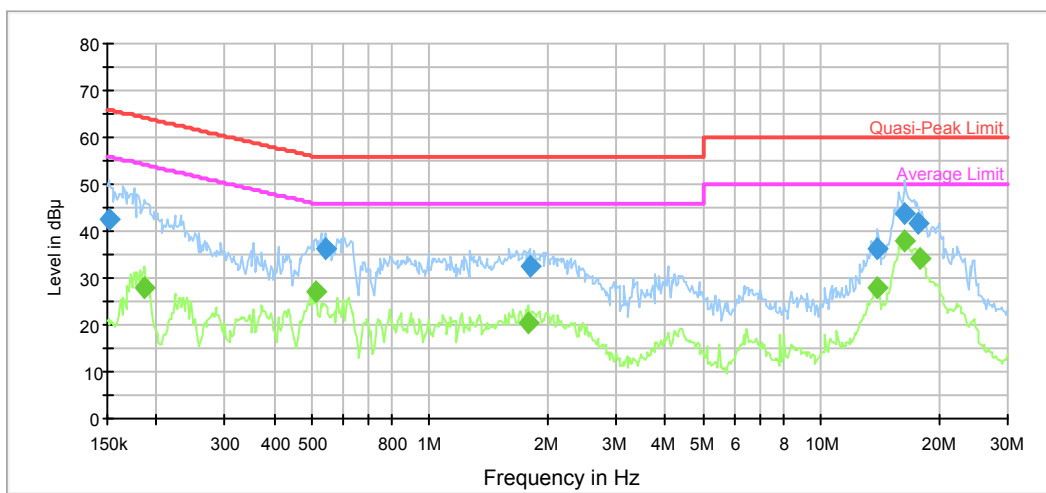
Environmental Conditions

Temperature:	25.3°C
Relative Humidity:	35 %
ATM Pressure:	102.0 kPa

The testing was performed by Gaochao Gong on 2017-12-16.

Test Mode: Transmitting

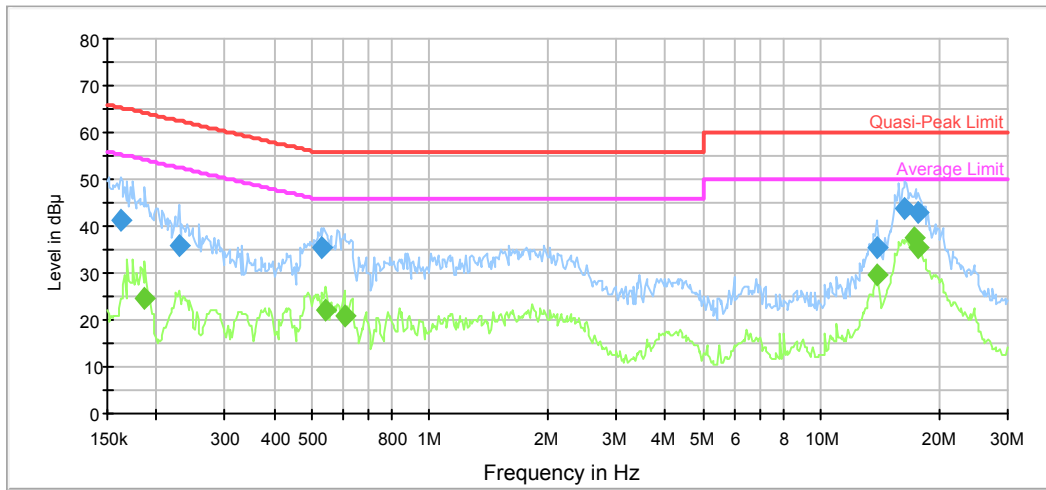
AC120 V, 60 Hz, Line:



Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.151200	42.5	9.000	L1	11.2	23.4	65.9	Compliance
0.541050	36.2	9.000	L1	9.9	19.8	56.0	Compliance
1.802095	32.5	9.000	L1	9.7	23.5	56.0	Compliance
13.968003	36.4	9.000	L1	9.9	23.6	60.0	Compliance
16.381172	43.6	9.000	L1	10.0	16.4	60.0	Compliance
17.739864	41.9	9.000	L1	10.0	18.1	60.0	Compliance

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.187494	27.8	9.000	L1	10.7	26.3	54.1	Compliance
0.511698	27.2	9.000	L1	9.9	18.8	46.0	Compliance
1.787792	20.4	9.000	L1	9.7	25.6	46.0	Compliance
13.968003	28.0	9.000	L1	9.9	22.0	50.0	Compliance
16.381172	38.1	9.000	L1	10.0	11.9	50.0	Compliance
17.881783	34.2	9.000	L1	10.0	15.8	50.0	Compliance

AC120 V, 60 Hz, Neutral:



requency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.162441	41.1	9.000	N	11.0	24.2	65.3	Compliance
0.228823	35.7	9.000	N	10.4	26.8	62.5	Compliance
0.528270	35.6	9.000	N	9.9	20.4	56.0	Compliance
13.857146	35.6	9.000	N	9.9	24.4	60.0	Compliance
16.381172	43.8	9.000	N	10.0	16.2	60.0	Compliance
17.739864	42.7	9.000	N	10.0	17.3	60.0	Compliance

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.187494	24.5	9.000	N	10.7	29.6	54.1	Compliance
0.541050	22.1	9.000	N	9.9	23.9	46.0	Compliance
0.604902	21.0	9.000	N	9.8	25.0	46.0	Compliance
13.968003	29.5	9.000	N	9.9	20.5	50.0	Compliance
17.320829	37.4	9.000	N	10.0	12.6	50.0	Compliance
17.739864	35.6	9.000	N	10.0	14.4	50.0	Compliance

FCC §15.209, §15.205 & §15.407(b) –UNWANTED EMISSION

Applicable Standard

FCC §15.407; §15.209; §15.205;

(b) Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(4) For transmitters operating in the 5.725-5.85 GHz band:

(i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

(ii) Devices certified before March 2, 2017 with antenna gain greater than 10 dBi may demonstrate compliance with the emission limits in §15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease by March 2, 2018. Devices certified before March 2, 2018 with antenna gain of 10 dBi or less may demonstrate compliance with the emission limits in §15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease before March 2, 2020.

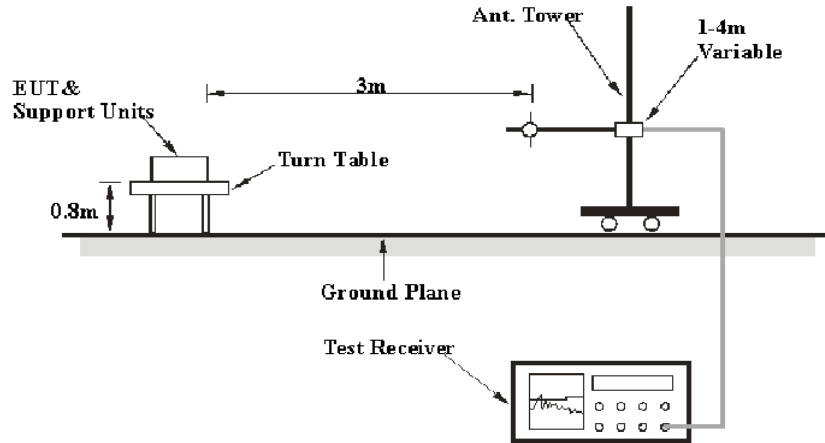
(5) The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.

(6) Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209. Further, any U-NII devices using an AC power line are required to comply also with the conducted limits set forth in §15.207.

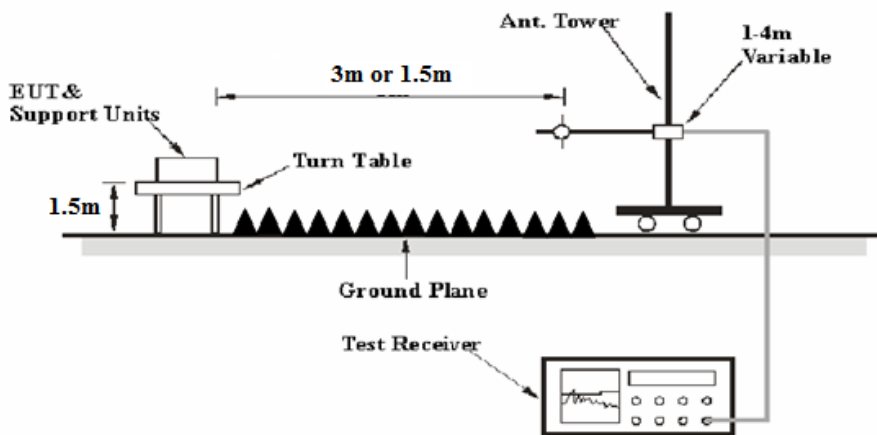
(7) The provisions of §15.205 apply to intentional radiators operating under this section.

EUT Setup

Below 1 GHz:



Above 1 GHz:



The radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC 15.209, and FCC 15.407 limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 40 GHz.

During the radiated emission test, the EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:

30-1000MHz:

Measurement	RBW	Video B/W	IF B/W
QP	120 kHz	300 kHz	120kHz

1GHz- 40GHz:

Measurement	Duty cycle	RBW	Video B/W
PK	Any	1MHz	3 MHz
Ave.	>98%	1MHz	10 Hz
	<98%	1MHz	1/T

Test Procedure

During the radiated emission test, the adapter was connected to the first AC floor outlet.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

Data was recorded in Quasi-peak detection mode for frequency range of 30 MHz-1GHz, peak and Average detection modes for frequencies above 1GHz.

According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01, emission shall be computed as: $E [dB\mu V/m] = EIRP[dBm] + 95.2$, for $d = 3$ meters.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

$$\text{Corrected Amplitude} = \text{Meter Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Extrapolation result} - \text{Limit}$$

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	EMI Test Receiver	ESCI	100224	2017-09-01	2018-09-01
Sunol Sciences	Antenna	JB3	A060611-1	2017-11-10	2018-11-10
HP	Amplifier	8447D	2727A05902	2017-09-05	2018-09-05
N/A	Coaxial Cable	C-NJNJ-50	C-0400-01	2017-09-05	2018-09-05
N/A	Coaxial Cable	C-NJNJ-50	C-0075-01	2017-09-05	2018-09-05
N/A	Coaxial Cable	C-NJNJ-50	C-1000-01	2017-09-05	2018-09-05
Agilent	Spectrum Analyzer	E4440A	SG43360054	2017-12-08	2018-12-08
ETS-Lindgren	Horn Antenna	3115	000 527 35	2016-01-05	2019-01-05
MITEQ	Amplifier	AFS42-00101800-25-S-42	2001271	2017-09-05	2018-09-05
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-02 1304	2016-11-18	2019-11-18
Ducommun Technologies	Horn Antenna	ARH-2823-02	1007726-01 1302	2016-11-18	2019-11-18
Quinstar	Amplifier	QLW-18405536-JO	15964001001	2017-06-27	2018-06-27
N/A	Coaxial Cable	C-SJSJ-50	C-0800-01	2017-09-05	2018-09-05
R&S	Spectrum Analyzer	FSP 38	100478	2017-12-08	2018-12-08
Chengdu OuLi	Bandrejector Filter	5725-5850	005	2017-09-05	2018-09-05
Farad	Test Software	EZ-EMC	V1.1.4.2	N/A	N/A

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data**Environmental Conditions**

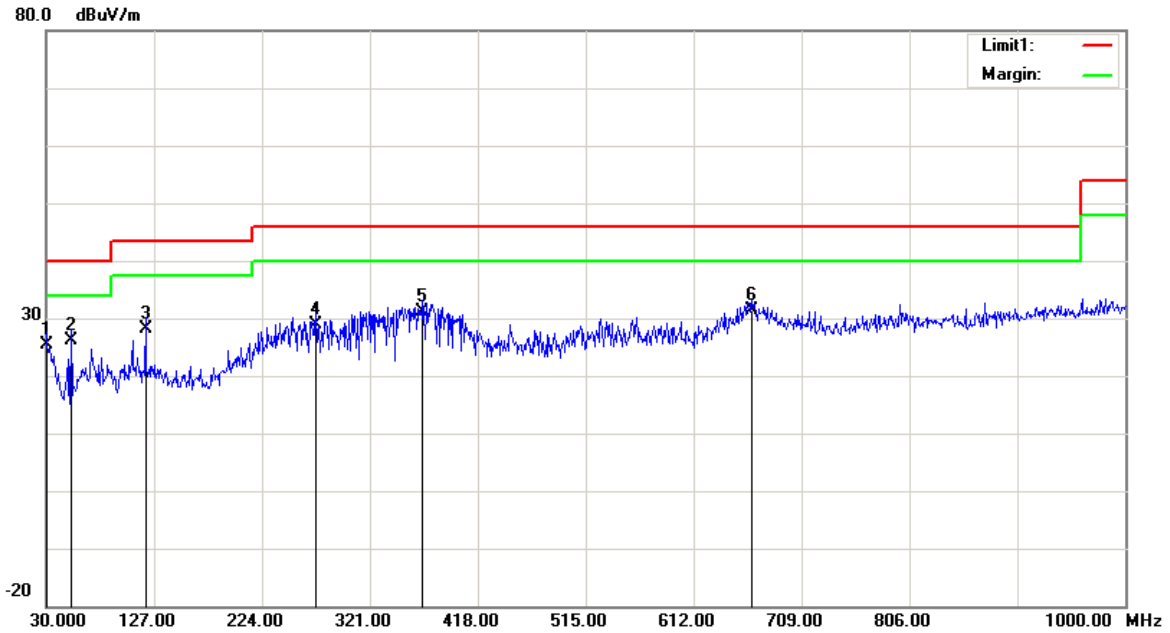
Temperature:	20.2~25.8 °C
Relative Humidity:	30.8~31 %
ATM Pressure:	101.5~102.9 kPa

* The testing was performed by Blake Yang and Kakaxi Chen from 2017-12-19 to 2017-12-20.

Test Mode: Transmitting

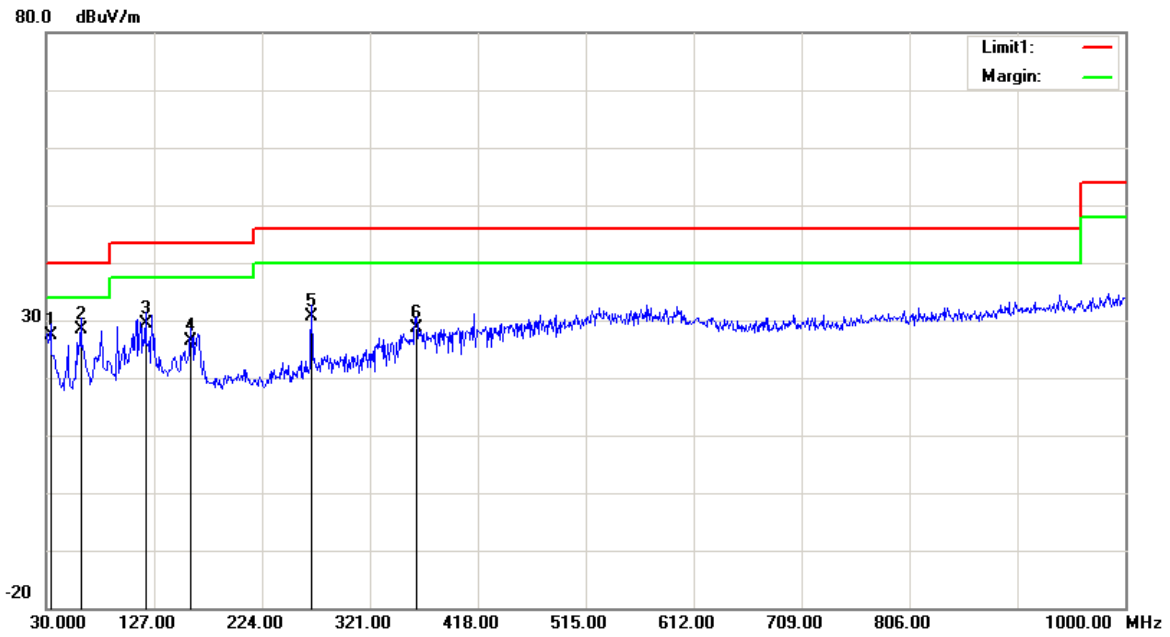
1) Below 1GHz(802.11a 5200 MHz was the worst):

Horizontal



Frequency (MHz)	Receiver Reading (dBμV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
30.0000	24.42	QP	1.08	25.50	40.00	14.50
52.3100	38.33	QP	-12.13	26.20	40.00	13.80
119.2400	33.03	QP	-4.93	28.10	43.50	15.40
272.5000	32.73	QP	-3.83	28.90	46.00	17.10
368.5300	33.96	QP	-2.86	31.10	46.00	14.90
664.3800	29.71	QP	1.59	31.30	46.00	14.70

Vertical



Frequency (MHz)	Receiver Reading (dBμV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
33.8800	29.25	QP	-1.85	27.40	40.00	12.60
61.0400	40.61	QP	-12.31	28.30	40.00	11.70
119.2400	34.43	QP	-4.93	29.50	43.50	14.00
159.9800	33.12	QP	-6.62	26.50	43.50	17.00
268.6200	34.85	QP	-4.15	30.70	46.00	15.30
362.7100	31.49	QP	-2.89	28.60	46.00	17.40

**2) 1GHz-40GHz:
5150-5250MHz
802.11a**

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
	Reading (dBµV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
Low Channel: 5180 MHz									
5180.00	59.91	PK	H	33.59	3.58	0.00	91.06	N/A	N/A
5180.00	49.85	AV	H	33.59	3.58	0.00	81.00	N/A	N/A
5180.00	72.74	PK	V	33.59	3.58	0.00	103.89	N/A	N/A
5180.00	63.52	AV	V	33.59	3.58	0.00	94.67	N/A	N/A
5150.00	27.56	PK	V	33.54	3.56	0.00	58.64	74.00	15.36
5150.00	15.01	AV	V	33.54	3.56	0.00	46.09	54.00	7.91
10360.00	47.68	PK	V	38.17	6.29	36.85	49.27	74.00	24.73
10360.00	34.46	AV	V	38.17	6.29	36.85	36.05	54.00	17.95
15540.00	46.85	PK	V	38.06	8.85	39.04	48.70	74.00	25.30
15540.00	33.57	AV	V	38.06	8.85	39.04	35.42	54.00	18.58
6908.50	48.39	PK	V	35.02	5.10	36.99	45.50	74.00	28.50
6908.50	35.46	AV	V	35.02	5.10	36.99	32.57	54.00	21.43
Middle Channel: 5200 MHz									
5200.00	60.37	PK	H	33.62	3.60	0.00	91.57	N/A	N/A
5200.00	50.46	AV	H	33.62	3.60	0.00	81.66	N/A	N/A
5200.00	71.83	PK	V	33.62	3.60	0.00	103.03	N/A	N/A
5200.00	61.57	AV	V	33.62	3.60	0.00	92.77	N/A	N/A
10400.00	47.82	PK	V	38.18	6.32	36.86	49.44	74.00	24.56
10400.00	35.78	AV	V	38.18	6.32	36.86	37.40	54.00	16.60
15600.00	46.81	PK	V	38.00	8.83	39.09	48.53	74.00	25.47
15600.00	33.47	AV	V	38.00	8.83	39.09	35.19	54.00	18.81
6916.00	48.54	PK	V	35.03	5.11	36.99	45.67	74.00	28.33
6916.00	34.72	AV	V	35.03	5.11	36.99	31.85	54.00	22.15
High Channel: 5240 MHz									
5240.00	60.24	PK	H	33.68	3.52	0.00	91.42	N/A	N/A
5240.00	50.18	AV	H	33.68	3.52	0.00	81.36	N/A	N/A
5240.00	71.94	PK	V	33.68	3.52	0.00	103.12	N/A	N/A
5240.00	61.68	AV	V	33.68	3.52	0.00	92.86	N/A	N/A
5350.00	26.79	PK	V	33.86	3.52	0.00	58.15	74.00	15.85
5350.00	14.57	AV	V	33.86	3.52	0.00	45.93	54.00	8.07
10480.00	47.61	PK	V	38.20	6.37	36.88	49.28	74.00	24.72
10480.00	34.87	AV	V	38.20	6.37	36.88	36.54	54.00	17.46
15720.00	46.87	PK	V	37.88	8.79	39.18	48.34	74.00	25.66
15720.00	33.73	AV	V	37.88	8.79	39.18	35.20	54.00	18.80
6916.00	48.44	PK	V	35.03	5.11	36.99	45.57	74.00	28.43
6916.00	34.76	AV	V	35.03	5.11	36.99	31.89	54.00	22.11

802.11n ht20

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
	Reading (dBµV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
Low Channel: 5180 MHz									
5180.00	60.56	PK	H	33.59	3.58	0.00	91.71	N/A	N/A
5180.00	50.36	AV	H	33.59	3.58	0.00	81.51	N/A	N/A
5180.00	71.77	PK	V	33.59	3.58	0.00	102.92	N/A	N/A
5180.00	63.09	AV	V	33.59	3.58	0.00	94.24	N/A	N/A
5150.00	27.71	PK	V	33.54	3.56	0.00	58.79	74.00	15.21
5150.00	15.08	AV	V	33.54	3.56	0.00	46.16	54.00	7.84
10360.00	47.65	PK	V	38.17	6.29	36.85	49.24	74.00	24.76
10360.00	34.64	AV	V	38.17	6.29	36.85	36.23	54.00	17.77
15540.00	46.69	PK	V	38.06	8.85	39.04	48.54	74.00	25.46
15540.00	33.46	AV	V	38.06	8.85	39.04	35.31	54.00	18.69
6916.00	48.61	PK	V	35.03	5.11	36.99	45.74	74.00	28.26
6916.00	34.73	AV	V	35.03	5.11	36.99	31.86	54.00	22.14
Middle Channel: 5200 MHz									
5200.00	59.94	PK	H	33.62	3.60	0.00	91.14	N/A	N/A
5200.00	50.32	AV	H	33.62	3.60	0.00	81.52	N/A	N/A
5200.00	71.57	PK	V	33.62	3.60	0.00	102.77	N/A	N/A
5200.00	62.35	AV	V	33.62	3.60	0.00	93.55	N/A	N/A
10400.00	47.66	PK	V	38.18	6.32	36.86	49.28	74.00	24.72
10400.00	34.58	AV	V	38.18	6.32	36.86	36.20	54.00	17.80
15600.00	46.67	PK	V	38.00	8.83	39.09	48.39	74.00	25.61
15600.00	33.62	AV	V	38.00	8.83	39.09	35.34	54.00	18.66
6916.00	48.54	PK	V	35.03	5.11	36.99	45.67	74.00	28.33
6916.00	34.74	AV	V	35.03	5.11	36.99	31.87	54.00	22.13
High Channel: 5240 MHz									
5240.00	59.86	PK	H	33.68	3.52	0.00	91.04	N/A	N/A
5240.00	50.24	AV	H	33.68	3.52	0.00	81.42	N/A	N/A
5240.00	71.68	PK	V	33.68	3.52	0.00	102.86	N/A	N/A
5240.00	62.38	AV	V	33.68	3.52	0.00	93.56	N/A	N/A
5350.00	26.57	PK	V	33.86	3.52	0.00	57.93	74.00	16.07
5350.00	14.25	AV	V	33.86	3.52	0.00	45.61	54.00	8.39
10480.00	47.73	PK	V	38.20	6.37	36.88	49.40	74.00	24.60
10480.00	34.75	AV	V	38.20	6.37	36.88	36.42	54.00	17.58
15720.00	46.81	PK	V	37.88	8.79	39.18	48.28	74.00	25.72
15720.00	33.58	AV	V	37.88	8.79	39.18	35.05	54.00	18.95
6916.00	48.46	PK	V	35.03	5.11	36.99	45.59	74.00	28.41
6916.00	34.89	AV	V	35.03	5.11	36.99	32.02	54.00	21.98

802.11n ht40

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
	Reading (dBµV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
Low Channel: 5190 MHz									
5190.00	57.61	PK	H	33.60	3.59	0.00	88.78	N/A	N/A
5190.00	48.26	AV	H	33.60	3.59	0.00	79.43	N/A	N/A
5190.00	68.88	PK	V	33.60	3.59	0.00	100.05	N/A	N/A
5190.00	57.99	AV	V	33.60	3.59	0.00	89.16	N/A	N/A
5150.00	28.81	PK	V	33.54	3.56	0.00	59.89	74.00	14.11
5150.00	15.24	AV	V	33.54	3.56	0.00	46.32	54.00	7.68
10380.00	47.79	PK	V	38.18	6.31	36.85	49.41	74.00	24.59
10380.00	34.77	AV	V	38.18	6.31	36.85	36.39	54.00	17.61
15570.00	46.88	PK	V	38.03	8.84	39.06	48.67	74.00	25.33
15570.00	33.73	AV	V	38.03	8.84	39.06	35.52	54.00	18.48
6917.00	48.36	PK	V	35.03	5.11	36.99	45.49	74.00	28.51
6917.00	34.82	AV	V	35.03	5.11	36.99	31.95	54.00	22.05
High Channel: 5230 MHz									
5230.00	58.79	PK	H	33.67	3.54	0.00	89.98	N/A	N/A
5230.00	48.58	AV	H	33.67	3.54	0.00	79.77	N/A	N/A
5230.00	69.23	PK	V	33.67	3.54	0.00	100.42	N/A	N/A
5230.00	59.86	AV	V	33.67	3.54	0.00	91.05	N/A	N/A
5350.00	27.64	PK	V	33.86	3.52	0.00	59.00	74.00	15.00
5350.00	14.35	AV	V	33.86	3.52	0.00	45.71	54.00	8.29
10460.00	47.64	PK	V	38.19	6.36	36.87	49.30	74.00	24.70
10460.00	34.83	AV	V	38.19	6.36	36.87	36.49	54.00	17.51
15690.00	46.73	PK	V	37.91	8.80	39.15	48.27	74.00	25.73
15690.00	33.53	AV	V	37.91	8.80	39.15	35.07	54.00	18.93
6917.00	48.32	PK	V	35.03	5.11	36.99	45.45	74.00	28.55
6917.00	34.75	AV	V	35.03	5.11	36.99	31.88	54.00	22.12

802.11 ac80

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
	Reading (dBµV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
Middle Channel: 5210 MHz									
5210.00	55.16	PK	H	33.64	3.58	0.00	86.36	N/A	N/A
5210.00	44.87	AV	H	33.64	3.58	0.00	76.07	N/A	N/A
5210.00	66.93	PK	V	33.64	3.58	0.00	98.13	N/A	N/A
5210.00	56.48	AV	V	33.64	3.58	0.00	87.68	N/A	N/A
5150.00	28.67	PK	V	33.54	3.56	0.00	59.75	74.00	14.25
5150.00	15.28	AV	V	33.54	3.56	0.00	46.36	54.00	7.64
5350.00	27.43	PK	V	33.86	3.52	0.00	58.79	74.00	15.21
5350.00	14.49	AV	V	33.86	3.52	0.00	45.85	54.00	8.15
10420.00	47.78	PK	V	38.18	6.33	36.86	49.41	74.00	24.59
10420.00	34.72	AV	V	38.18	6.33	36.86	36.35	54.00	17.65
15630.00	46.78	PK	V	37.97	8.82	39.11	48.44	74.00	25.56
15630.00	33.73	AV	V	37.97	8.82	39.11	35.39	54.00	18.61
6916.00	48.41	PK	V	35.03	5.11	36.99	45.54	74.00	28.46
6916.00	34.77	AV	V	35.03	5.11	36.99	31.90	54.00	22.10

5725-5850MHz:

802.11a

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
	Reading (dBµV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
Low Channel: 5745MHz									
5745.00	57.76	PK	H	34.20	3.69	0.00	89.63	N/A	N/A
5745.00	47.83	AV	H	34.20	3.69	0.00	79.70	N/A	N/A
5745.00	68.65	PK	V	34.20	3.69	0.00	100.52	N/A	N/A
5745.00	59.54	AV	V	34.20	3.69	0.00	91.41	N/A	N/A
5725.00	27.85	PK	V	34.19	3.69	0.00	59.71	122.20	62.49
5720.00	27.13	PK	V	34.19	3.69	0.00	58.99	110.80	51.81
5700.00	26.75	PK	V	34.18	3.68	0.00	58.59	105.20	46.61
5650.00	26.24	PK	V	34.16	3.63	0.00	58.01	68.20	10.19
11490.00	47.83	PK	V	38.99	6.59	37.35	50.04	74.00	23.96
11490.00	34.59	AV	V	38.99	6.59	37.35	36.80	54.00	17.20
17235.00	47.45	PK	V	41.56	8.78	38.61	53.16	74.00	20.84
17235.00	34.26	AV	V	41.56	8.78	38.61	39.97	54.00	14.03
7845.00	45.87	PK	V	36.71	4.62	36.99	44.19	74.00	29.81
7845.00	33.52	AV	V	36.71	4.62	36.99	31.84	54.00	22.16
Middle Channel: 5785 MHz									
5785.00	57.12	PK	H	34.21	3.71	0.00	89.02	N/A	N/A
5785.00	47.23	AV	H	34.21	3.71	0.00	79.13	N/A	N/A
5785.00	68.37	PK	V	34.21	3.71	0.00	100.27	N/A	N/A
5785.00	58.44	AV	V	34.21	3.71	0.00	90.34	N/A	N/A
11570.00	47.64	PK	V	39.00	6.61	37.44	49.79	74.00	24.21
11570.00	34.41	AV	V	39.00	6.61	37.44	36.56	54.00	17.44
17355.00	47.42	PK	V	42.26	8.81	38.52	53.95	74.00	20.05
17355.00	34.13	AV	V	42.26	8.81	38.52	40.66	54.00	13.34
7796.00	45.67	PK	V	36.68	4.58	37.08	43.83	74.00	30.17
7796.00	33.64	AV	V	36.68	4.58	37.08	31.80	54.00	22.20
High Channel: 5825 MHz									
5825.00	57.13	PK	H	34.23	3.73	0.00	89.07	N/A	N/A
5825.00	47.26	AV	H	34.23	3.73	0.00	79.20	N/A	N/A
5825.00	68.35	PK	V	34.23	3.73	0.00	100.29	N/A	N/A
5825.00	58.54	AV	V	34.23	3.73	0.00	90.48	N/A	N/A
5850.00	28.96	PK	V	34.24	3.75	0.00	60.93	122.20	61.27
5855.00	28.88	PK	V	34.24	3.75	0.00	60.85	110.80	49.95
5875.00	28.85	PK	V	34.25	3.77	0.00	60.85	105.20	44.35
5925.00	27.44	PK	V	34.27	3.80	0.00	59.49	68.20	8.71
11650.00	47.89	PK	V	39.00	6.64	37.53	49.98	74.00	24.02
11650.00	34.79	AV	V	39.00	6.64	37.53	36.88	54.00	17.12
17475.00	47.38	PK	V	42.96	8.84	38.44	54.72	74.00	19.28
17475.00	34.07	AV	V	42.96	8.84	38.44	41.41	54.00	12.59
9135.00	46.05	PK	V	37.75	5.56	36.84	46.50	74.00	27.50
9135.00	33.39	AV	V	37.75	5.56	36.84	33.84	54.00	20.16

802.11n ht20

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
	Reading (dB μ V)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
Low Channel: 5745MHz									
5745.00	57.93	PK	H	34.20	3.69	0.00	89.80	N/A	N/A
5745.00	47.73	AV	H	34.20	3.69	0.00	79.60	N/A	N/A
5745.00	68.76	PK	V	34.20	3.69	0.00	100.63	N/A	N/A
5745.00	59.63	AV	V	34.20	3.69	0.00	91.50	N/A	N/A
5725.00	27.71	PK	V	34.19	3.69	0.00	59.57	122.20	62.63
5720.00	27.06	PK	V	34.19	3.69	0.00	58.92	110.80	51.88
5700.00	26.79	PK	V	34.18	3.68	0.00	58.63	105.20	46.57
5650.00	26.73	PK	V	34.16	3.63	0.00	58.50	68.20	9.70
11490.00	47.99	PK	V	38.99	6.59	37.35	50.20	74.00	23.80
11490.00	34.79	AV	V	38.99	6.59	37.35	37.00	54.00	17.00
17235.00	47.26	PK	V	41.56	8.78	38.61	52.97	74.00	21.03
17235.00	34.26	AV	V	41.56	8.78	38.61	39.97	54.00	14.03
8465.00	45.95	PK	V	37.36	5.14	37.09	45.34	74.00	28.66
8465.00	33.56	AV	V	37.36	5.14	37.09	32.95	54.00	21.05
Middle Channel: 5785 MHz									
5785.00	56.84	PK	H	34.21	3.71	0.00	88.74	N/A	N/A
5785.00	46.72	AV	H	34.21	3.71	0.00	78.62	N/A	N/A
5785.00	68.62	PK	V	34.21	3.71	0.00	100.52	N/A	N/A
5785.00	58.49	AV	V	34.21	3.71	0.00	90.39	N/A	N/A
11570.00	47.66	PK	V	39.00	6.61	37.44	49.81	74.00	24.19
11570.00	34.44	AV	V	39.00	6.61	37.44	36.59	54.00	17.41
17355.00	47.25	PK	V	42.26	8.81	38.52	53.78	74.00	20.22
17355.00	34.44	AV	V	42.26	8.81	38.52	40.97	54.00	13.03
7895.00	45.87	PK	V	36.74	4.67	36.90	44.36	74.00	29.64
7895.00	33.59	AV	V	36.74	4.67	36.90	32.08	54.00	21.92
High Channel: 5825 MHz									
5825.00	56.79	PK	H	34.23	3.73	0.00	88.73	N/A	N/A
5825.00	46.83	AV	H	34.23	3.73	0.00	78.77	N/A	N/A
5825.00	68.74	PK	V	34.23	3.73	0.00	100.68	N/A	N/A
5825.00	58.46	AV	V	34.23	3.73	0.00	90.40	N/A	N/A
5850.00	28.75	PK	V	34.24	3.75	0.00	60.72	122.20	61.48
5855.00	27.64	PK	V	34.24	3.75	0.00	59.61	110.80	51.19
5875.00	27.34	PK	V	34.25	3.77	0.00	59.34	105.20	45.86
5925.00	27.18	PK	V	34.27	3.80	0.00	59.23	68.20	8.97
11650.00	47.74	PK	V	39.00	6.64	37.53	49.83	74.00	24.17
11650.00	34.48	AV	V	39.00	6.64	37.53	36.57	54.00	17.43
17475.00	47.46	PK	V	42.96	8.84	38.44	54.80	74.00	19.20
17475.00	34.46	AV	V	42.96	8.84	38.44	41.80	54.00	12.20
9135.00	45.99	PK	V	37.75	5.56	36.84	46.44	74.00	27.56
9135.00	33.45	AV	V	37.75	5.56	36.84	33.90	54.00	20.10

802.11n ht40

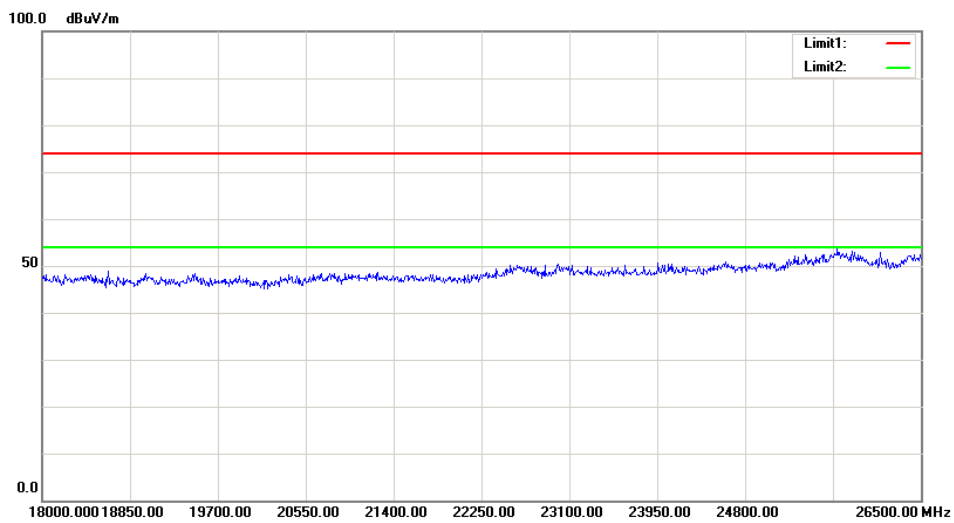
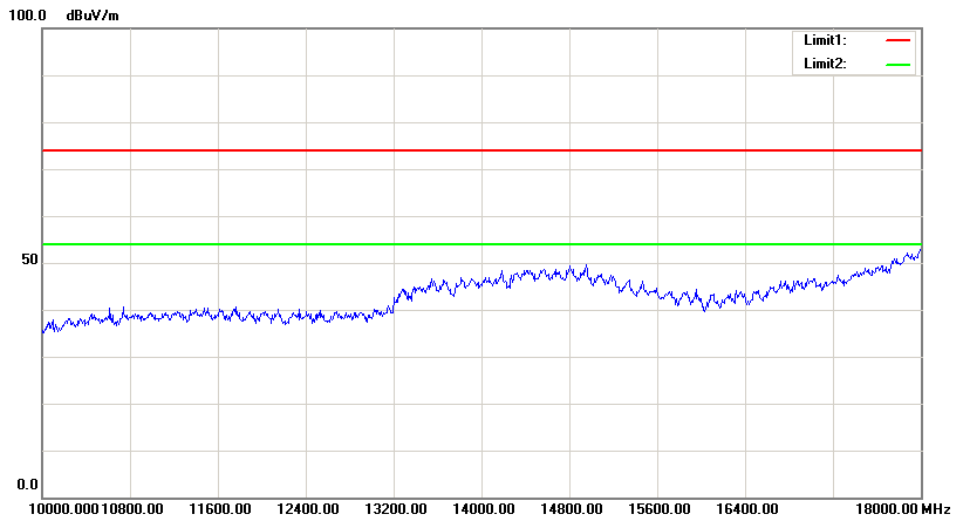
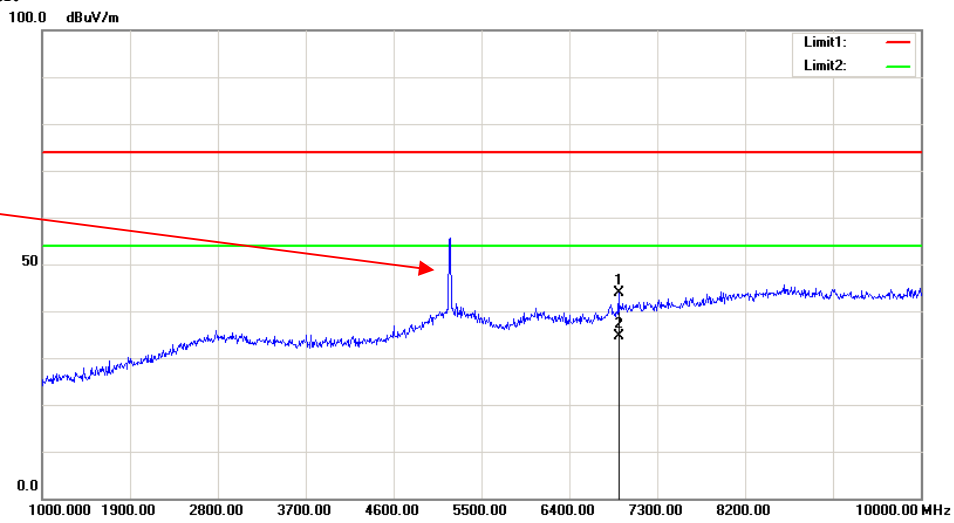
Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
	Reading (dBµV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
Low Channel: 5755MHz									
5755.00	54.52	PK	H	34.20	3.70	0.00	86.40	N/A	N/A
5755.00	44.68	AV	H	34.20	3.70	0.00	76.56	N/A	N/A
5755.00	65.95	PK	V	34.20	3.70	0.00	97.83	N/A	N/A
5755.00	55.86	AV	V	34.20	3.70	0.00	87.74	N/A	N/A
5725.00	27.78	PK	V	34.19	3.69	0.00	59.64	122.20	62.56
5720.00	27.45	PK	V	34.19	3.69	0.00	59.31	110.80	51.49
5700.00	27.15	PK	V	34.18	3.68	0.00	58.99	105.20	46.21
5650.00	26.63	PK	V	34.16	3.63	0.00	58.40	68.20	9.80
11510.00	47.74	PK	V	39.00	6.59	37.37	49.94	74.00	24.06
11510.00	34.56	AV	V	39.00	6.59	37.37	36.76	54.00	17.24
17265.00	47.65	PK	V	41.74	8.79	38.58	53.58	74.00	20.42
17265.00	34.18	AV	V	41.74	8.79	38.58	40.11	54.00	13.89
8675.00	46.04	PK	V	37.51	5.28	37.05	45.76	74.00	28.24
8675.00	33.57	AV	V	37.51	5.28	37.05	33.29	54.00	20.71
High Channel: 5795 MHz									
5795.00	54.35	PK	H	34.22	3.71	0.00	86.26	N/A	N/A
5795.00	44.64	AV	H	34.22	3.71	0.00	76.55	N/A	N/A
5795.00	66.21	PK	V	34.22	3.71	0.00	98.12	N/A	N/A
5795.00	55.94	AV	V	34.22	3.71	0.00	87.85	N/A	N/A
5850.00	29.82	PK	V	34.24	3.75	0.00	61.79	122.20	60.41
5855.00	28.35	PK	V	34.24	3.75	0.00	60.32	110.80	50.48
5875.00	28.06	PK	V	34.25	3.77	0.00	60.06	105.20	45.14
5925.00	27.62	PK	V	34.27	3.80	0.00	59.67	68.20	8.53
11590.00	47.81	PK	V	39.00	6.62	37.46	49.95	74.00	24.05
11590.00	34.67	AV	V	39.00	6.62	37.46	36.81	54.00	17.19
17385.00	47.38	PK	V	42.43	8.82	38.50	54.11	74.00	19.89
17385.00	34.13	AV	V	42.43	8.82	38.50	40.86	54.00	13.14
8695.00	45.83	PK	V	37.52	5.29	37.05	45.57	74.00	28.43
8695.00	33.47	AV	V	37.52	5.29	37.05	33.21	54.00	20.79

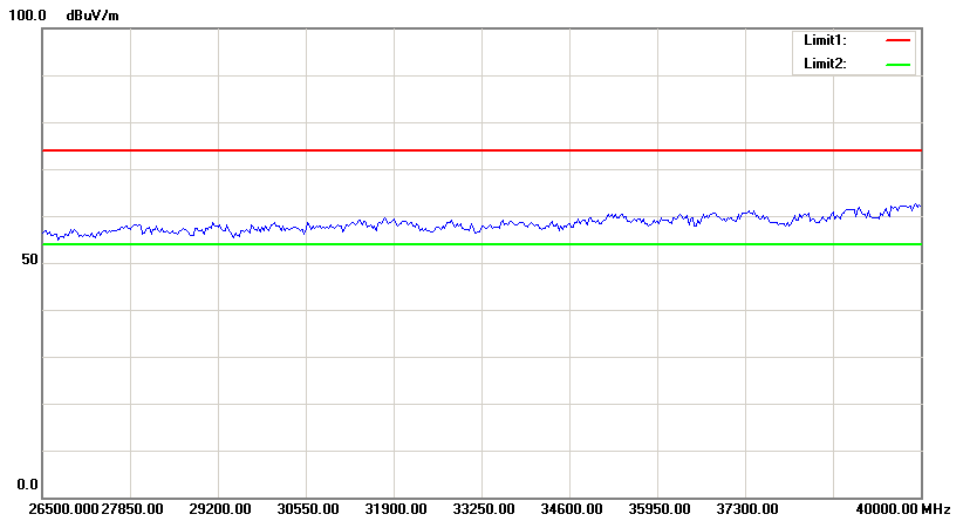
802.11 ac80

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
	Reading (dBµV)	Detector (PK/QP/AV)	Polar (H/V)	Factor (dB)					
Middle Channel: 5775 MHz									
5775.00	51.79	PK	H	34.21	3.70	0.00	83.68	N/A	N/A
5775.00	41.66	AV	H	34.21	3.70	0.00	73.55	N/A	N/A
5775.00	63.57	PK	V	34.21	3.70	0.00	95.46	N/A	N/A
5775.00	53.39	AV	V	34.21	3.70	0.00	85.28	N/A	N/A
5725.00	27.23	PK	V	34.19	3.69	0.00	59.09	122.20	63.11
5720.00	26.85	PK	V	34.19	3.69	0.00	58.71	110.80	52.09
5700.00	26.47	PK	V	34.18	3.68	0.00	58.31	105.20	46.89
5650.00	26.34	PK	V	34.16	3.63	0.00	58.11	68.20	10.09
5850.00	27.84	PK	V	34.24	3.75	0.00	59.81	122.20	62.39
5855.00	27.17	PK	V	34.24	3.75	0.00	59.14	110.80	51.66
5875.00	26.45	PK	V	34.25	3.77	0.00	58.45	105.20	46.75
5925.00	25.93	PK	V	34.27	3.80	0.00	57.98	68.20	10.22
11550.00	47.74	PK	V	39.00	6.61	37.42	49.91	74.00	24.09
11550.00	34.67	AV	V	39.00	6.61	37.42	36.84	54.00	17.16
17325.00	47.47	PK	V	42.09	8.80	38.54	53.80	74.00	20.20
17325.00	34.41	AV	V	42.09	8.80	38.54	40.74	54.00	13.26
9135.00	46.02	PK	V	37.75	5.56	36.84	46.47	74.00	27.53
9135.00	33.37	AV	V	37.75	5.56	36.84	33.82	54.00	20.18

**Test Plots(For worst mode 802.11a 5200MHz)
Horizontal:**

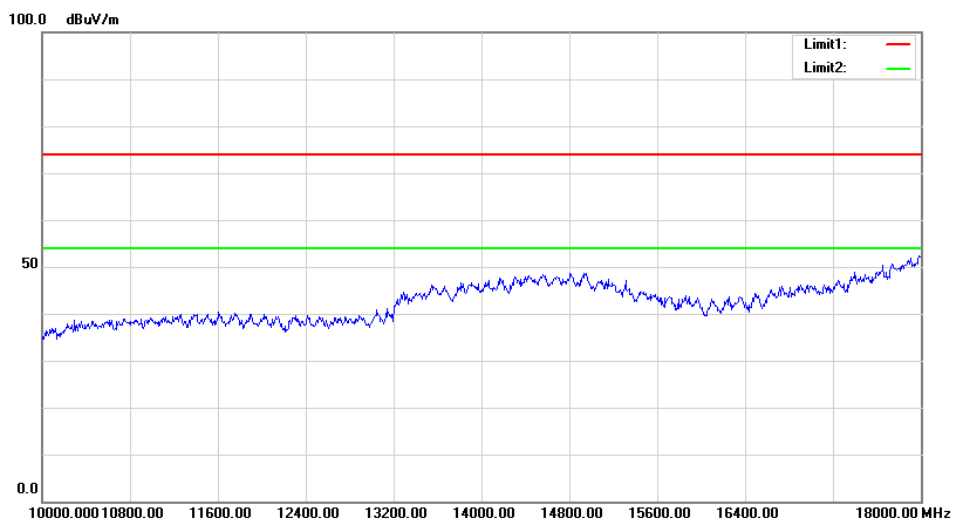
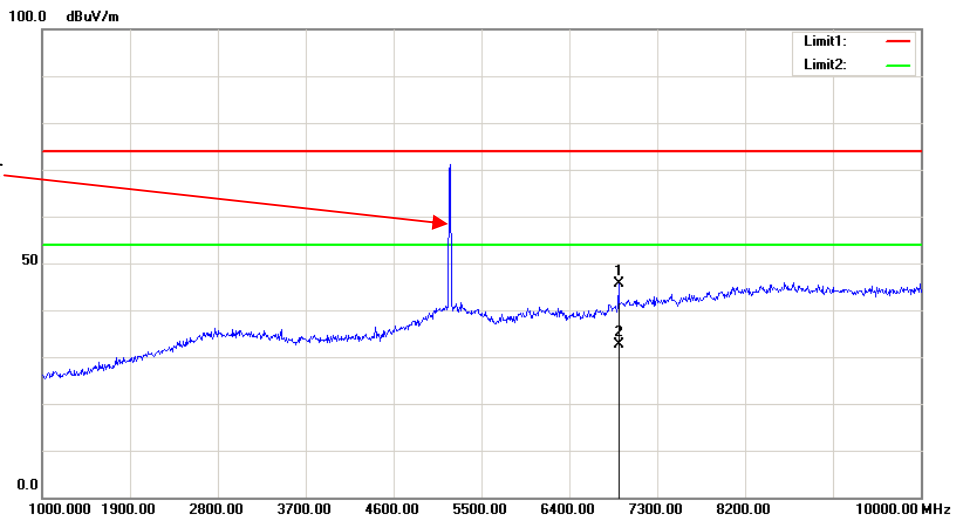
Fundamental
Test with Band
Rejection Filter

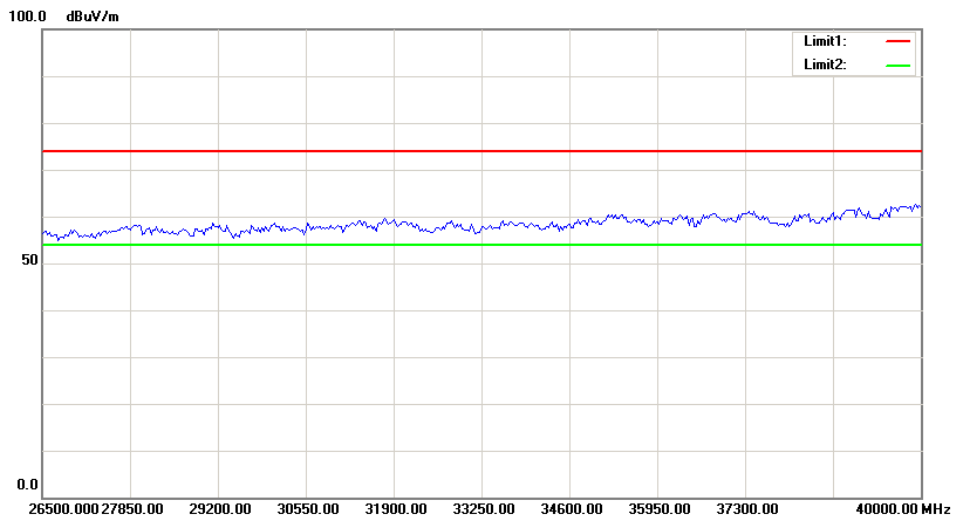
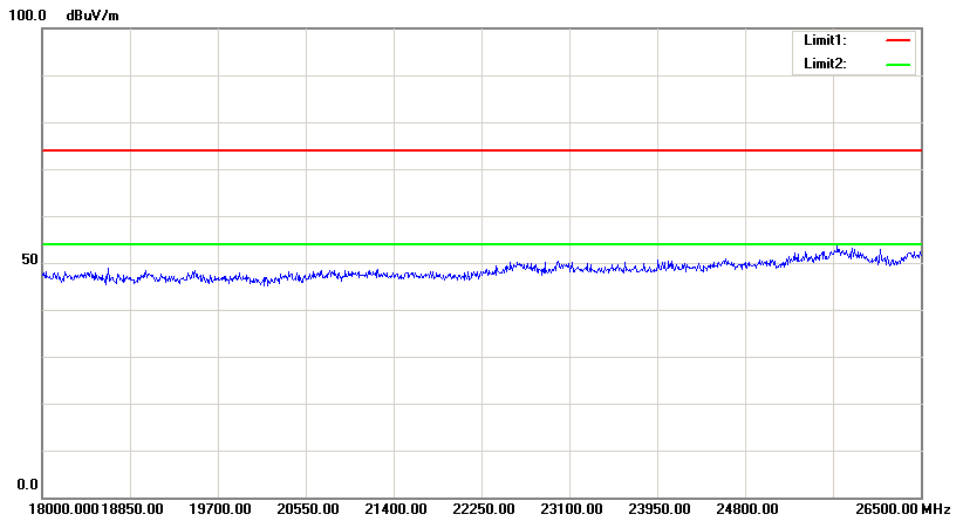




Vertical:

Fundamental Test with Band Rejection Filter





FCC §15.407(b)–OUT- OF-BAND EMISSIONS

Applicable Standard

FCC §15.407

(b) Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(2) For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(3) For transmitters operating in the 5.47-5.725 GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(4) For transmitters operating in the 5.725-5.85 GHz band:

(i) All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

(ii) Devices certified before March 2, 2017 with antenna gain greater than 10 dBi may demonstrate compliance with the emission limits in §15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease by March 2, 2018. Devices certified before March 2, 2018 with antenna gain of 10 dBi or less may demonstrate compliance with the emission limits in §15.247(d), but manufacturing, marketing and importing of devices certified under this alternative must cease before March 2, 2020.

(5) The emission measurements shall be performed using a minimum resolution bandwidth of 1 MHz. A lower resolution bandwidth may be employed near the band edge, when necessary, provided the measured energy is integrated to show the total power over 1 MHz.

Test Procedure

According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU 26	200256	2017-12-08	2018-12-08
N/A	Coaxial Cable	C-SJ00-0010	C0010/04	Each Time	/

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data**Environmental Conditions**

Temperature:	25.3 °C
Relative Humidity:	35 %
ATM Pressure:	102 kPa

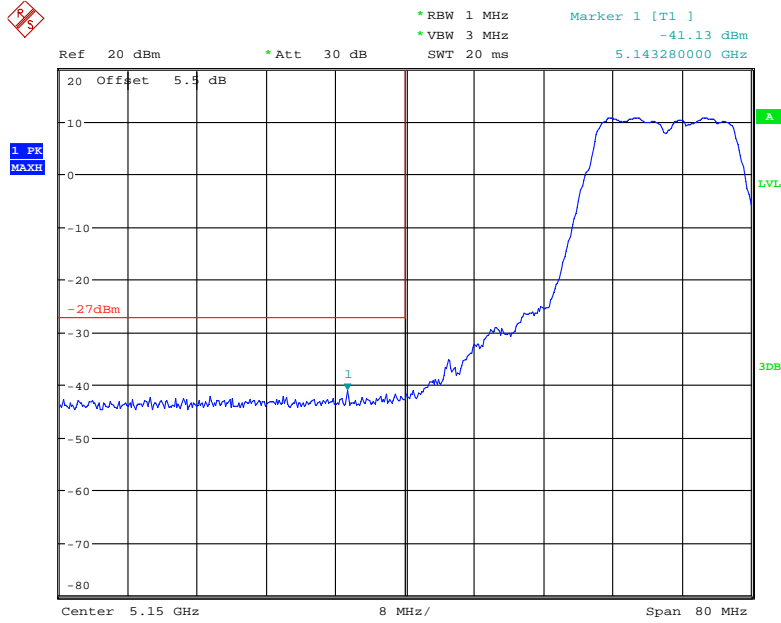
* *The testing was performed by George Pang on 2017-12-16.*

Test Result: Pass.

The antenna gain and cable loss have been offset in the plots, please refer to the following plots.

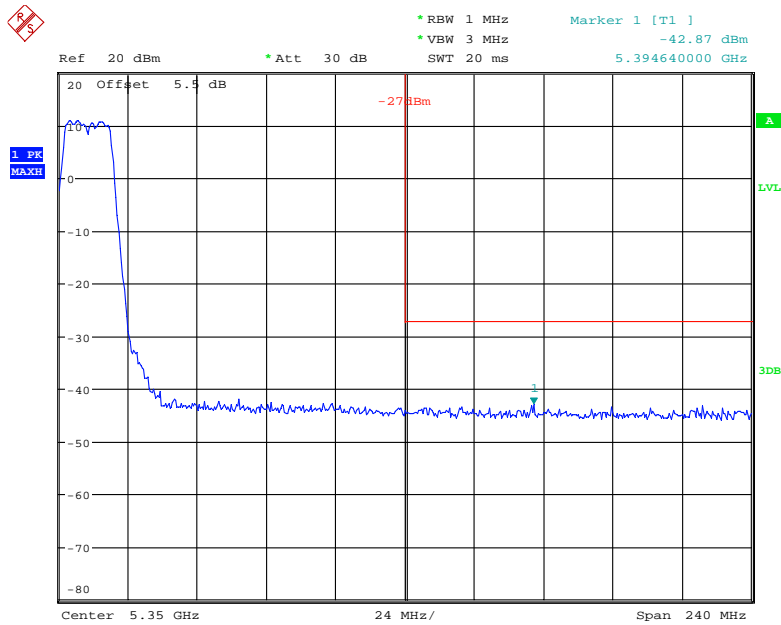
5150-5250MHz

802.11a Low Channel



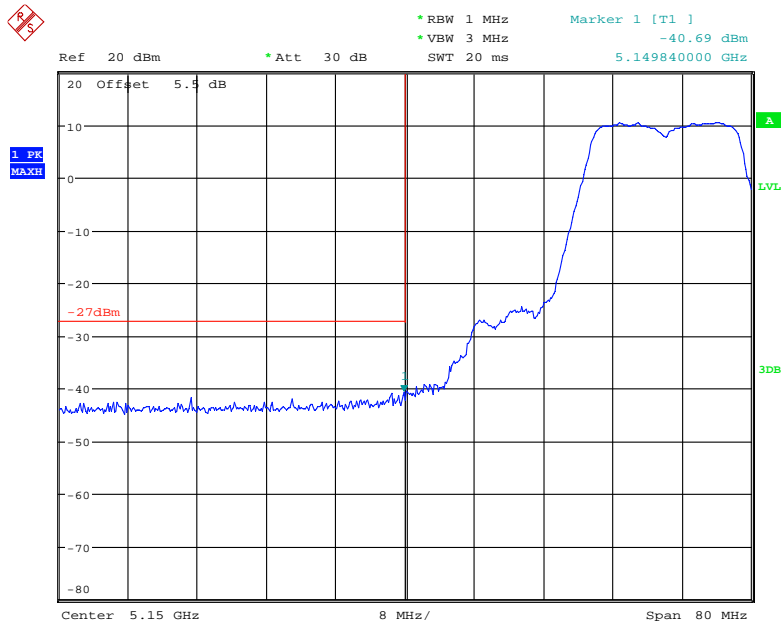
Date: 16.DEC.2017 16:06:33

802.11a High Channel



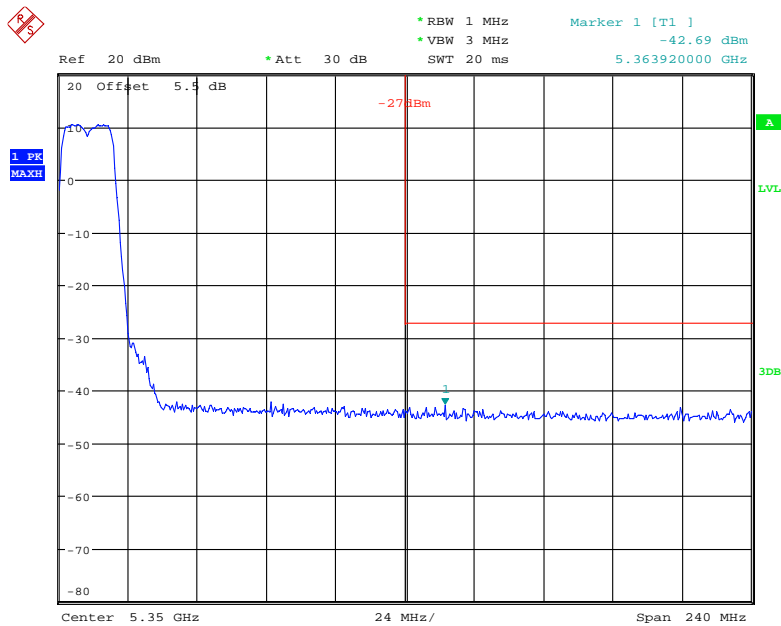
Date: 16.DEC.2017 16:10:07

802.11n ht20 Low Channel



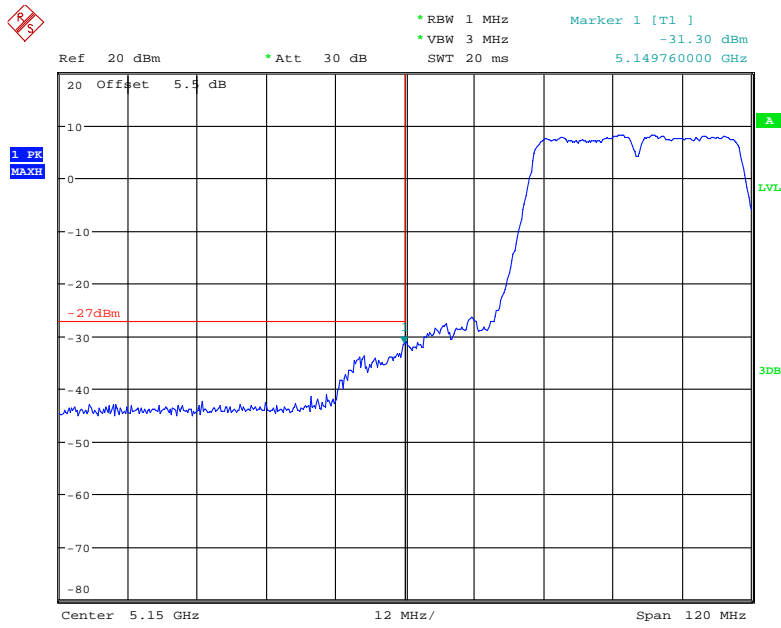
Date: 16.DEC.2017 16:16:30

802.11n ht20 High Channel



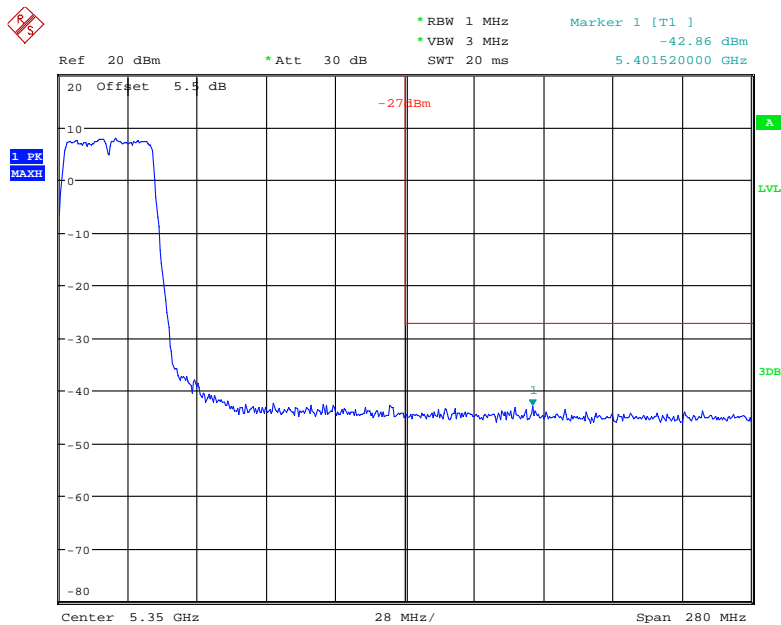
Date: 16.DEC.2017 16:13:11

802.11n ht40 Low Channel



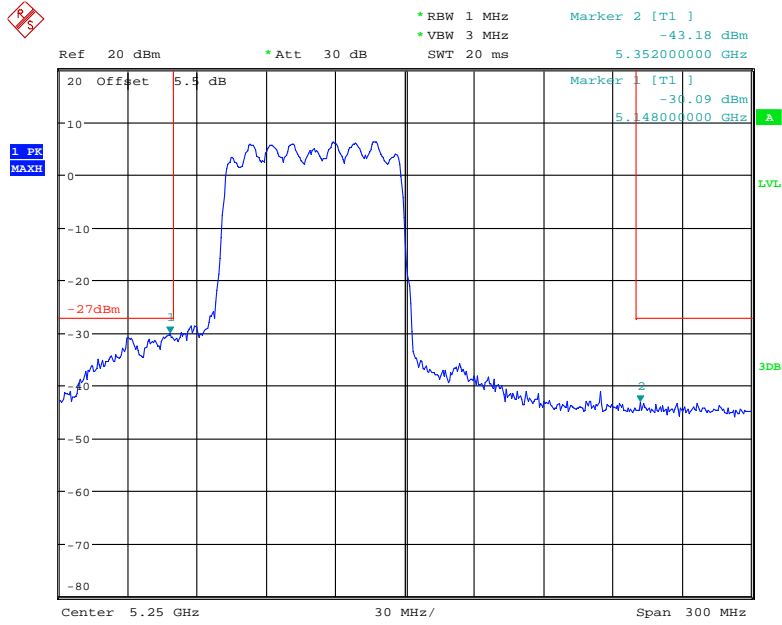
Date: 16.DEC.2017 16:19:19

802.11n ht40 High Channel



Date: 16.DEC.2017 16:21:28

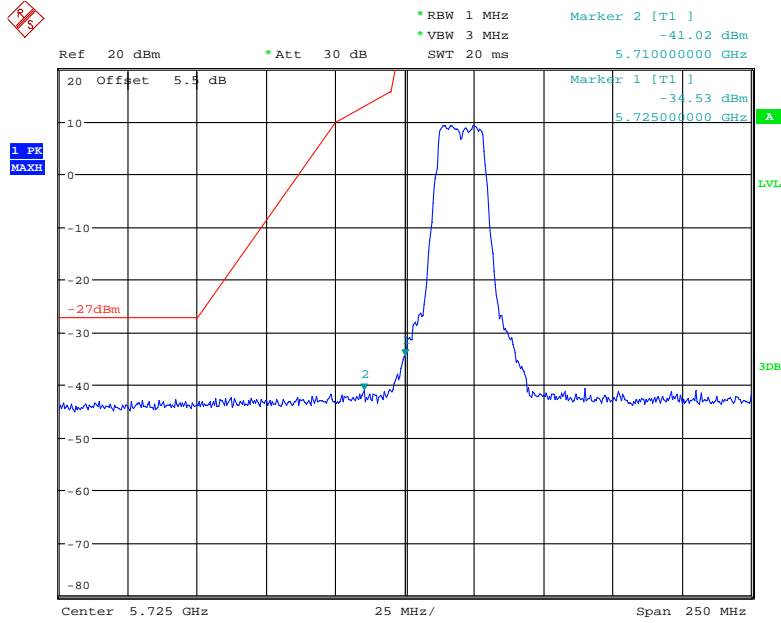
802.11n ac80 Middle Channel



Date: 16.DEC.2017 16:23:27

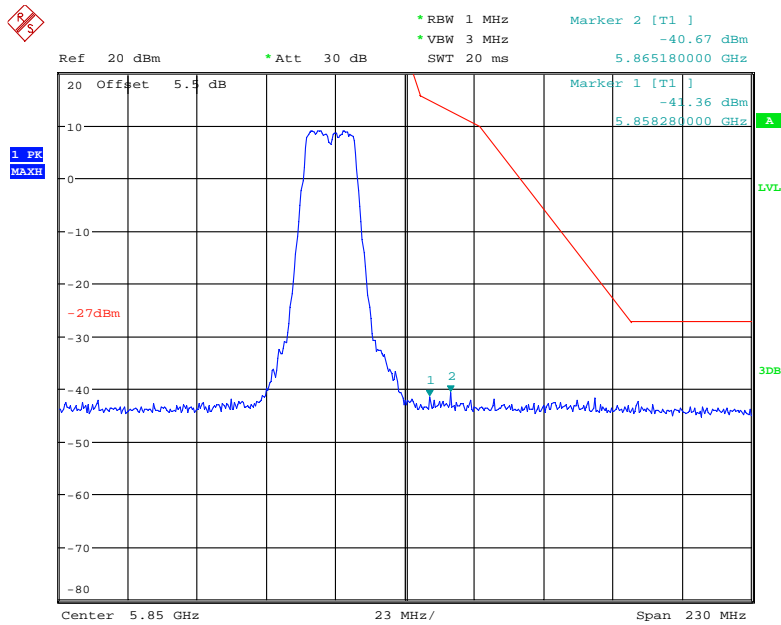
5725-5850MHz

802.11a Low Channel



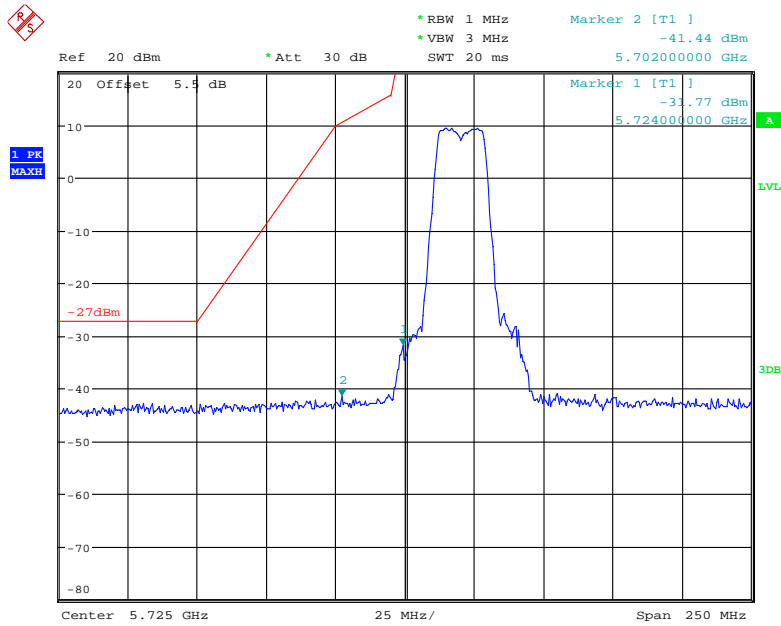
Date: 16.DEC.2017 16:31:31

802.11a High Channel



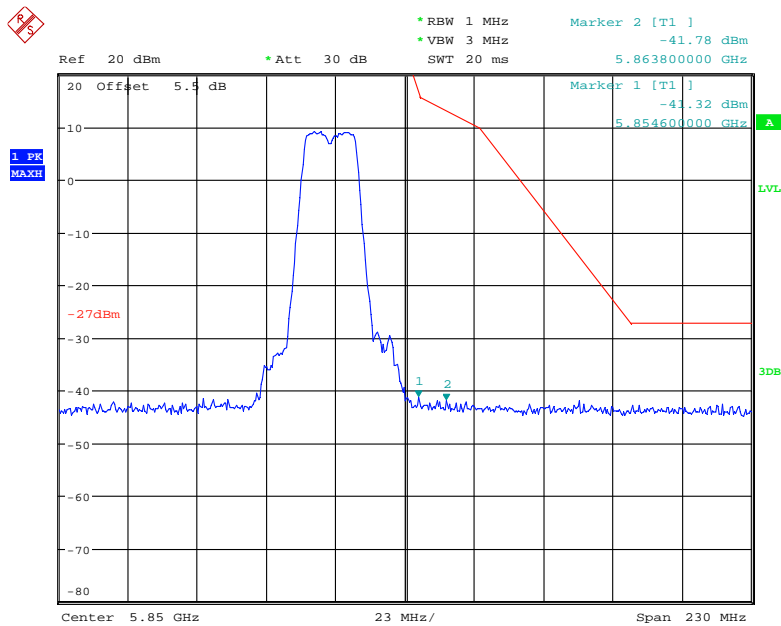
Date: 16.DEC.2017 16:36:41

802.11n ht20 Low Channel



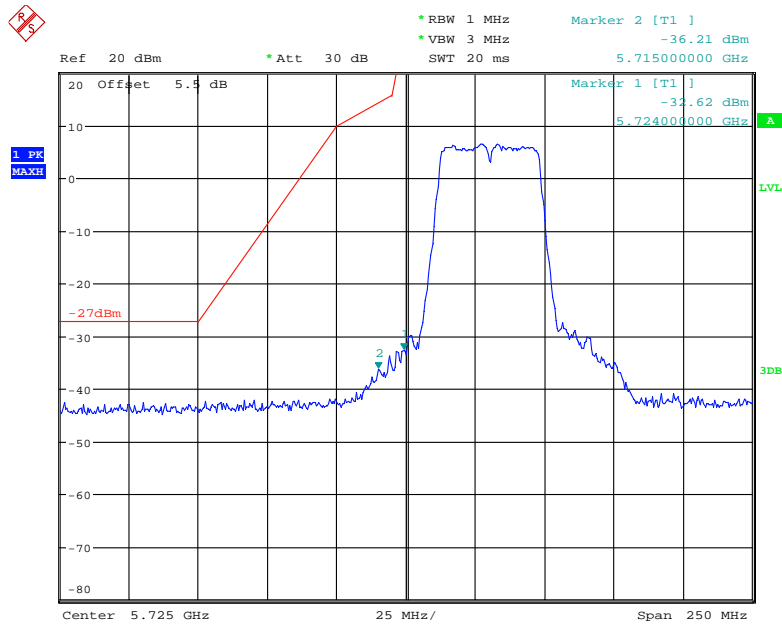
Date: 16.DEC.2017 16:56:02

802.11n ht20 High Channel



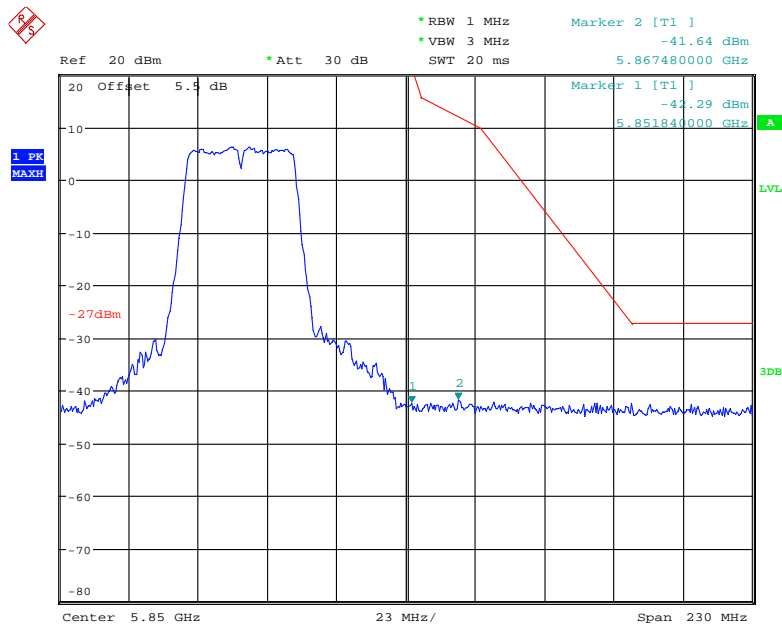
Date: 16.DEC.2017 16:38:52

802.11n ht40 Low Channel



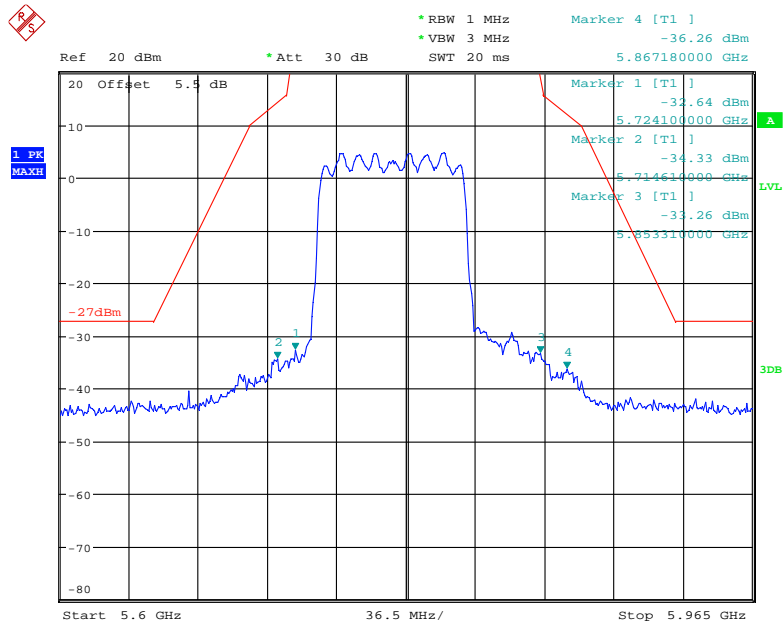
Date: 16.DEC.2017 16:47:10

802.11n ht40 High Channel



Date: 16.DEC.2017 16:49:21

802.11n ac80 Middle Channel



Date: 16.DEC.2017 16:51:49

FCC §15.407(a)(e) –EMISSION BANDWIDTH AND OCCUPIED BANDWIDTH

Applicable Standard

15.407(a) (e)

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU 26	200256	2017-12-08	2018-12-08
N/A	Coaxial Cable	C-SJ00-0010	C0010/04	Each Time	/

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Procedure

According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01

Test Data

Environmental Conditions

Temperature:	25.3 °C
Relative Humidity:	35 %
ATM Pressure:	102 kPa

* *The testing was performed by George Pang on 2017-12-16.*

Test Result: Pass.

Please refer to the following tables and plots.

Test mode: Transmitting

5150-5250MHz:

Mode	Channel	Frequency (MHz)	26 dB Emission Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11 a	Low	5180	21	16.88
	Middle	5200	21	16.88
	High	5240	21	16.88
802.11n ht20	Low	5180	21.88	17.84
	Middle	5200	21.88	17.84
	High	5240	21.72	17.84
802.11n ht40	Low	5190	41.52	36.96
	High	5230	41.84	36.96
802.11ac80	Middle	5210	81.44	75.2

Note: the 99% Occupied Bandwidth have not fall into the band 5250-5350MHz, please refer to the test plots of 99% Occupied Bandwidth.

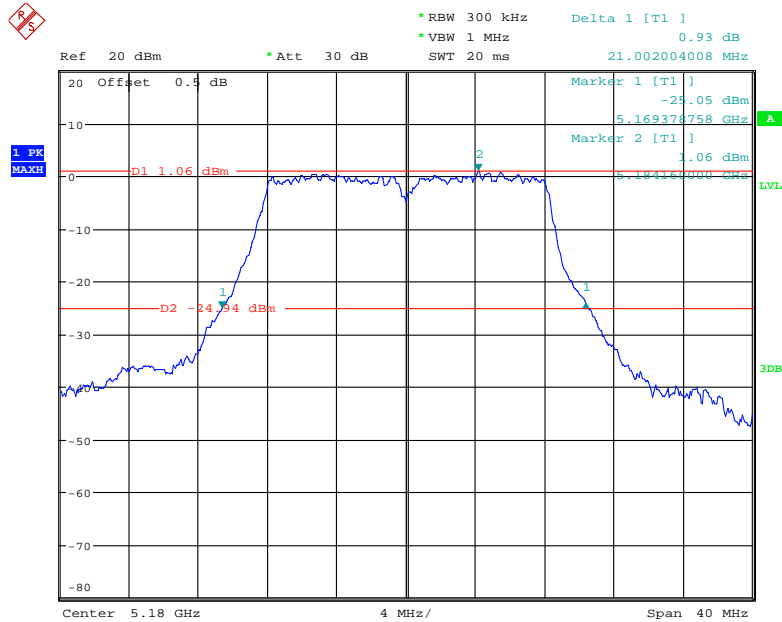
5725-5850MHz:

Mode	Channel	Frequency (MHz)	6 dB Emission Bandwidth (MHz)	99% Occupied Bandwidth (MHz)
802.11 a	Low	5745	16.35	16.88
	Middle	5785	16.43	16.88
	High	5825	16.51	16.88
802.11n ht20	Low	5745	17.56	17.92
	Middle	5785	17.56	17.92
	High	5825	17.56	17.84
802.11n ht40	Low	5755	36.23	36.96
	High	5795	36.23	36.96
802.11ac80	Middle	5775	75.35	75.52

Note: For 5725-5850MHz band, the 99% Occupied Bandwidth have not fall into the band 5470-5725MHz.

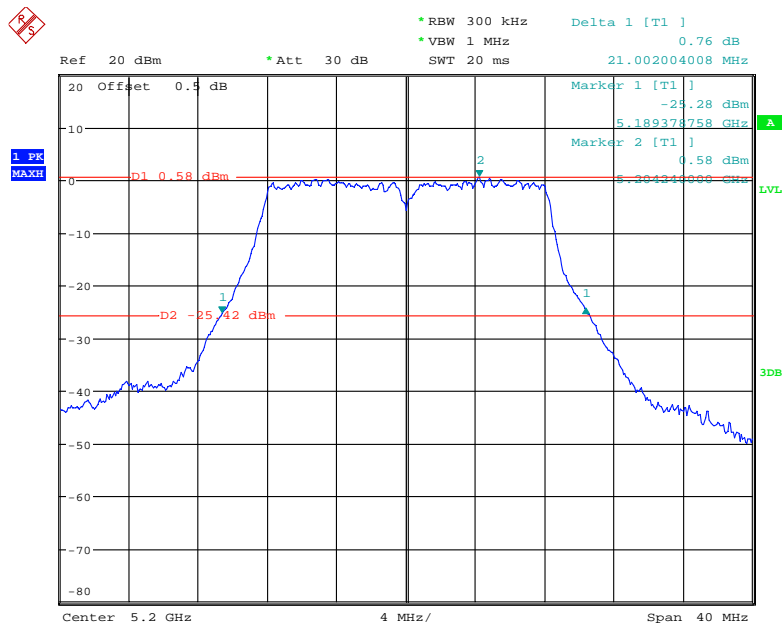
5150-5250MHz: 26dB Emission Bandwidth:

802.11a Low Channel



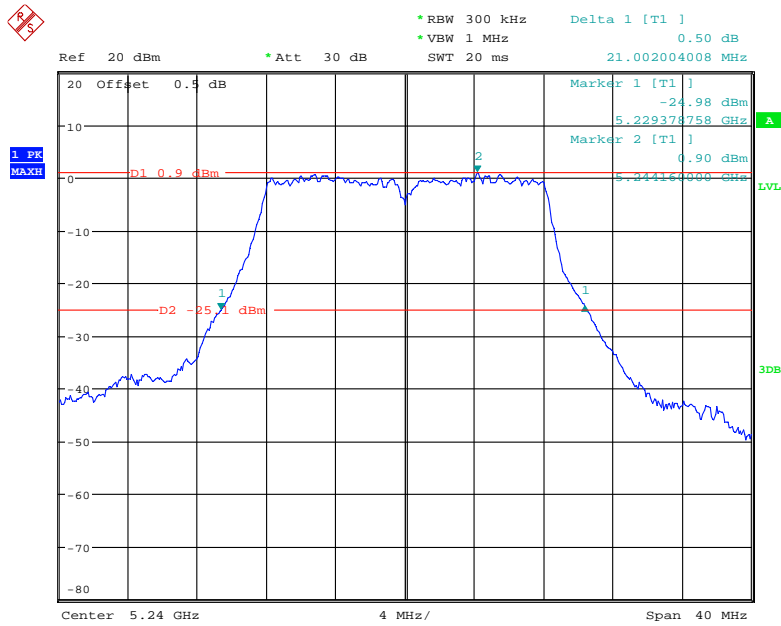
Date: 16.DEC.2017 16:05:37

802.11a Middle Channel



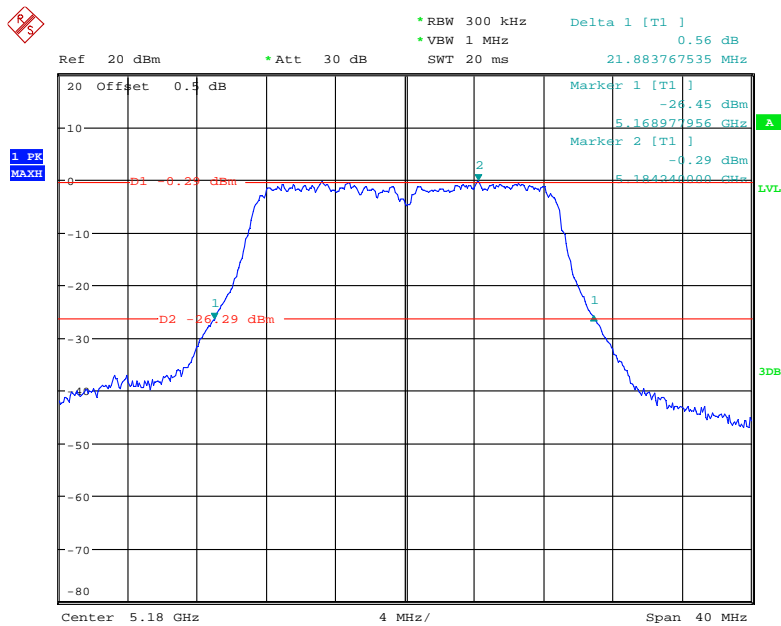
Date: 16.DEC.2017 16:07:26

802.11a High Channel



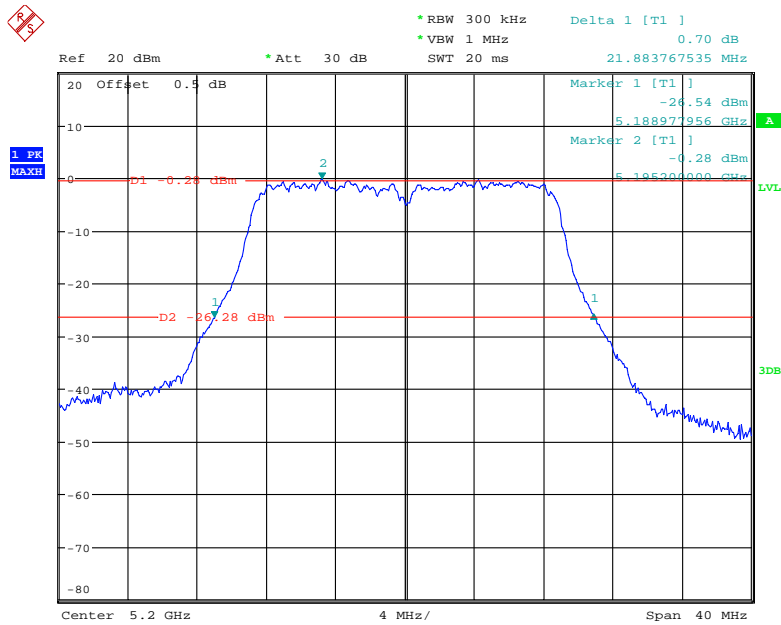
Date: 16.DEC.2017 16:09:17

802.11n ht20 Low Channel



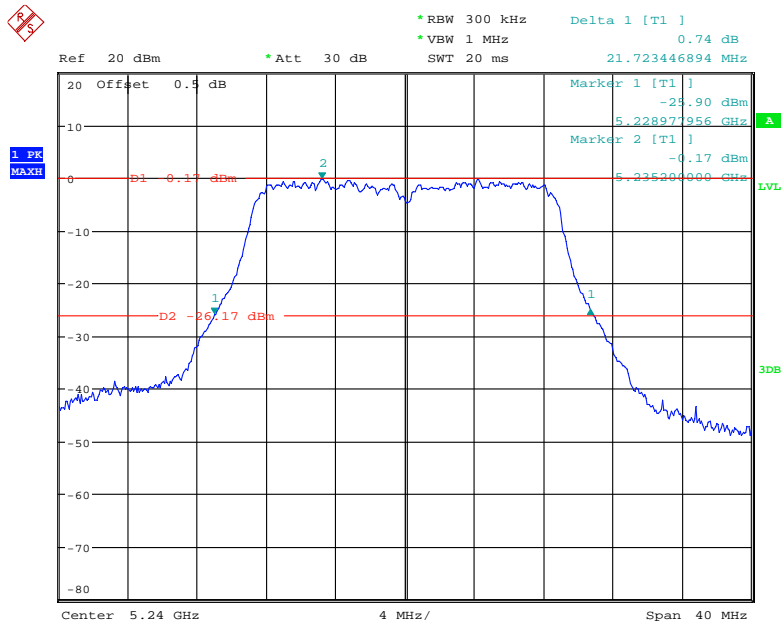
Date: 16.DEC.2017 16:15:33

802.11n ht20 Middle Channel



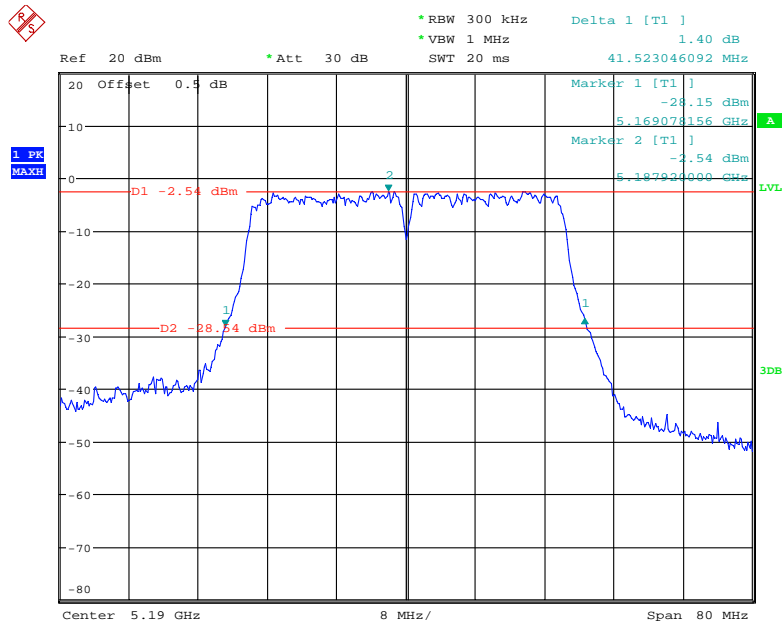
Date: 16.DEC.2017 16:14:02

802.11n ht20 High Channel



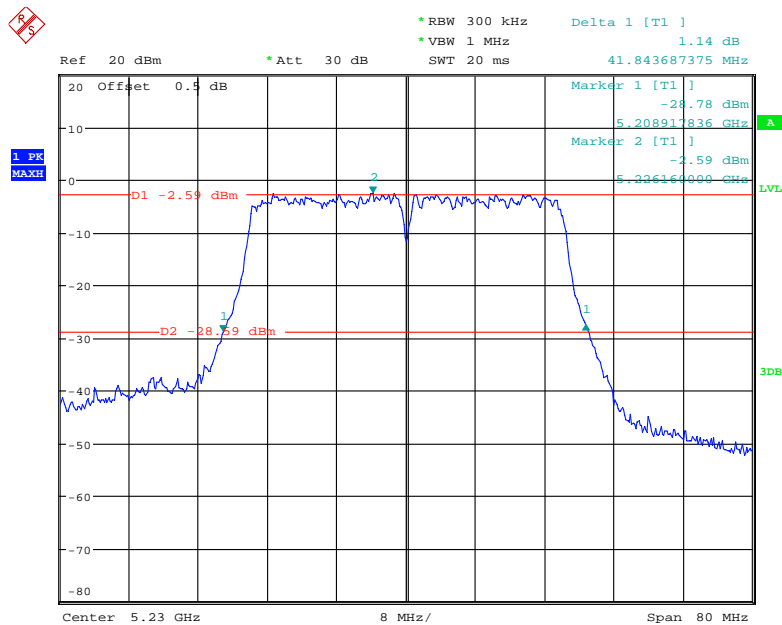
Date: 16.DEC.2017 16:12:21

802.11n ht40 Low Channel



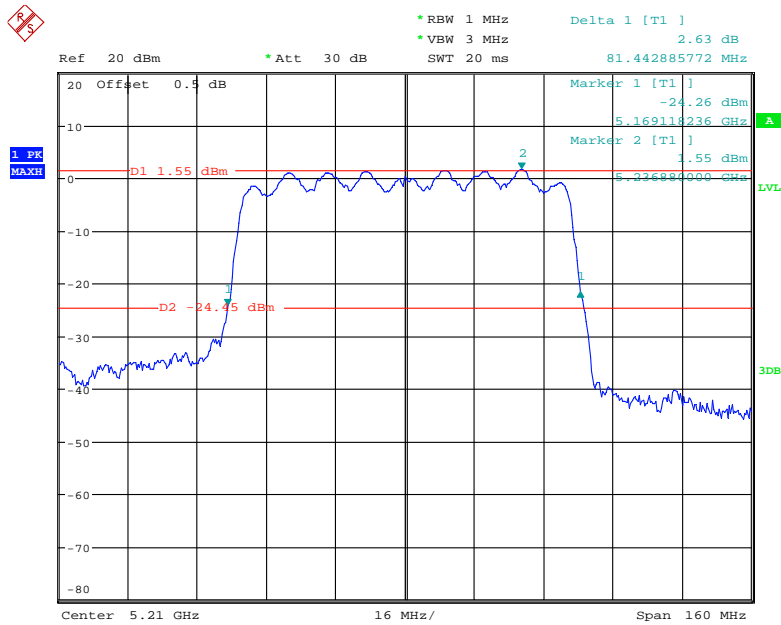
Date: 16.DEC.2017 16:18:22

802.11n ht40 High Channel



Date: 16.DEC.2017 16:20:38

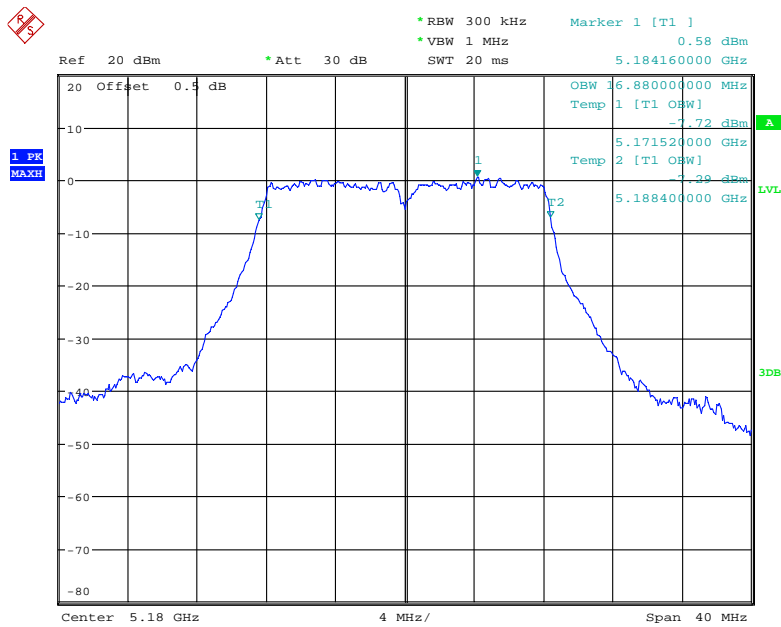
802.11ac80 Middle Channel



Date: 16.DEC.2017 16:22:32

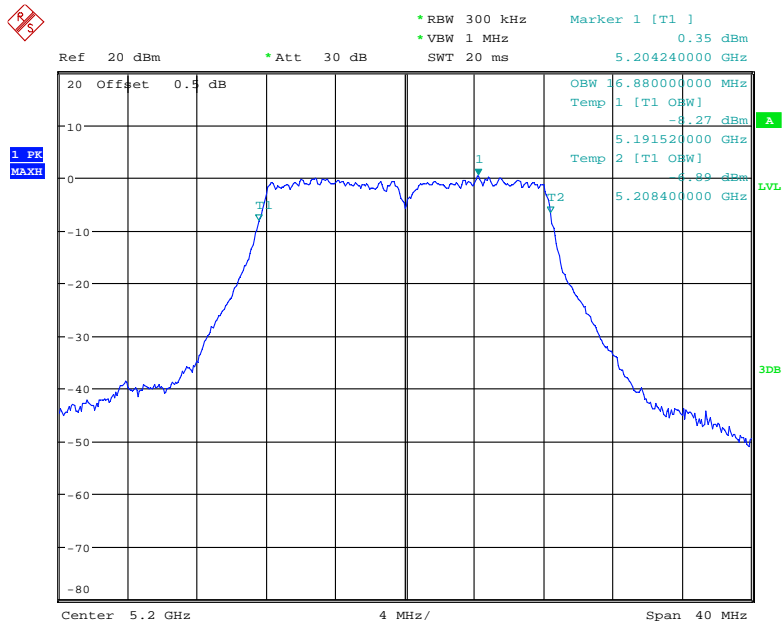
99% Occupied Bandwidth

802.11a Low Channel



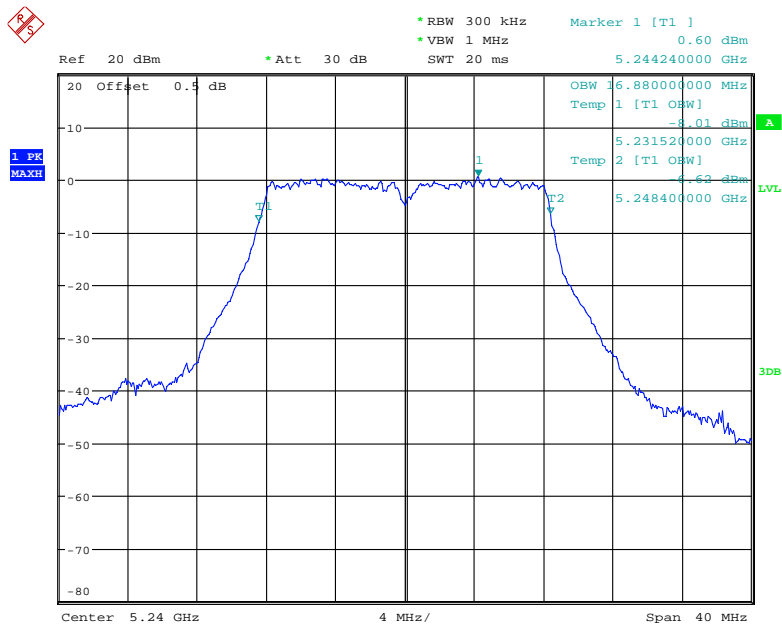
Date: 16.DEC.2017 16:05:50

802.11a Middle Channel



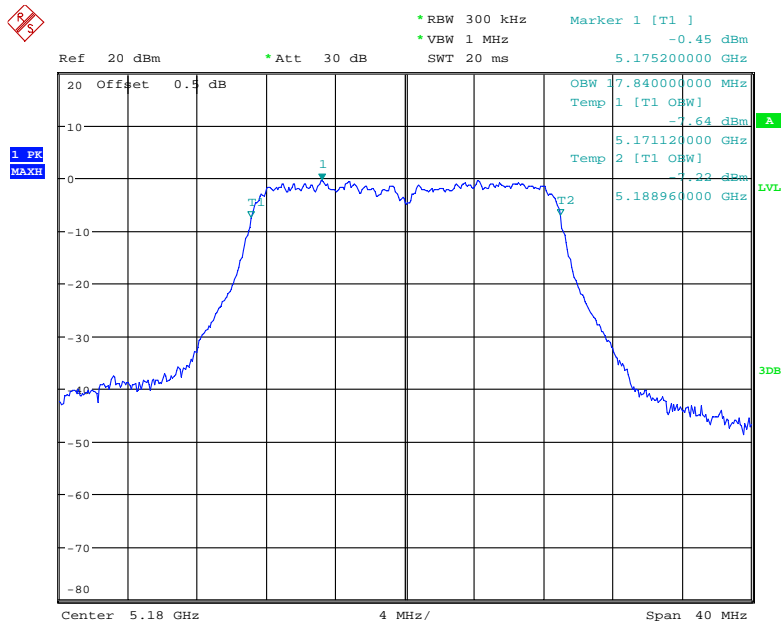
Date: 16.DEC.2017 16:07:38

802.11a High Channel



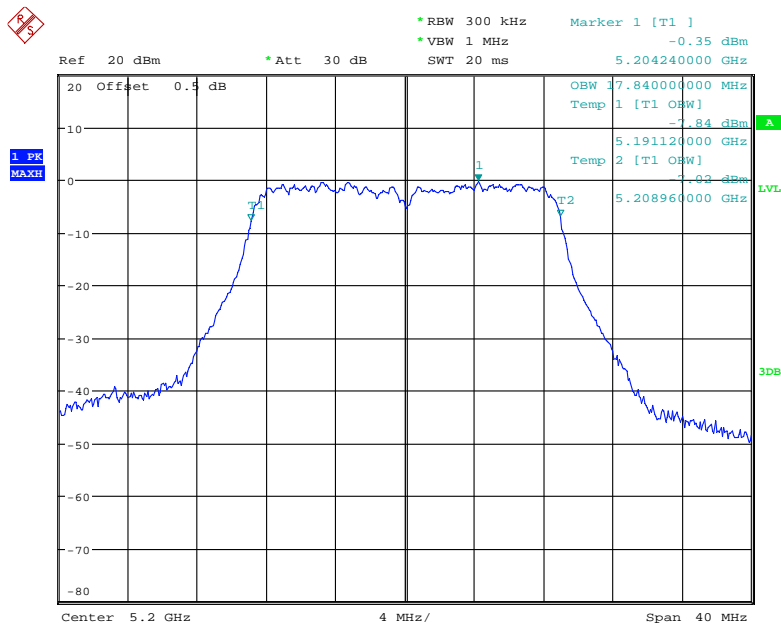
Date: 16.DEC.2017 16:09:29

802.11n ht20 Low Channel



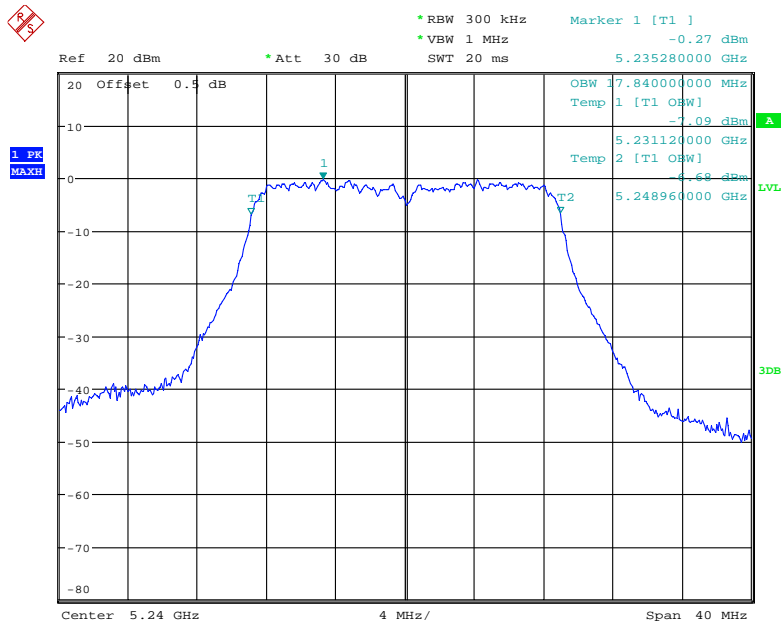
Date: 16.DEC.2017 16:15:46

802.11n ht20 Middle Channel



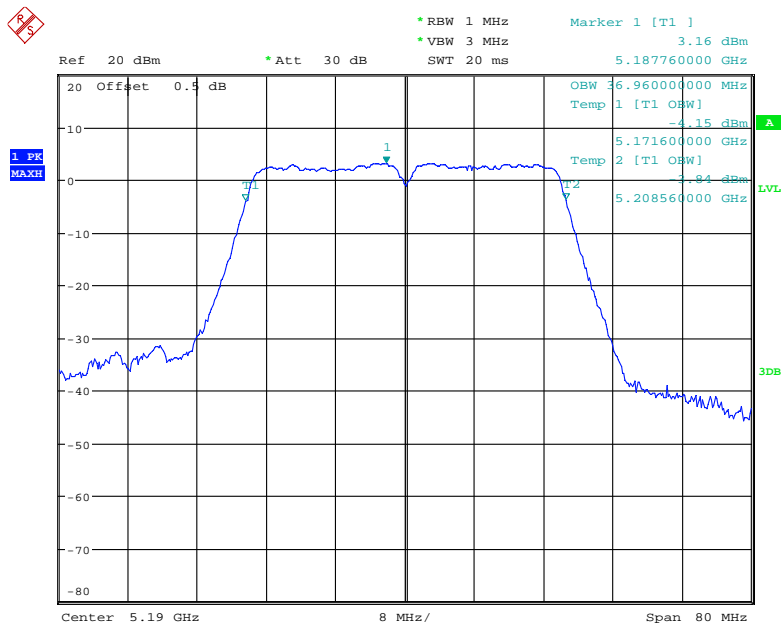
Date: 16.DEC.2017 16:14:15

802.11n ht20 High Channel



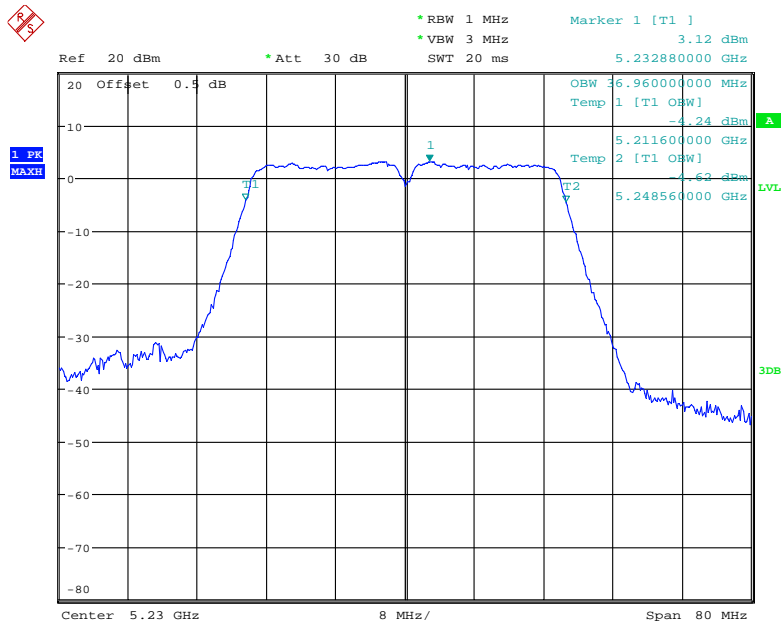
Date: 16.DEC.2017 16:12:33

802.11n ht40 Low Channel



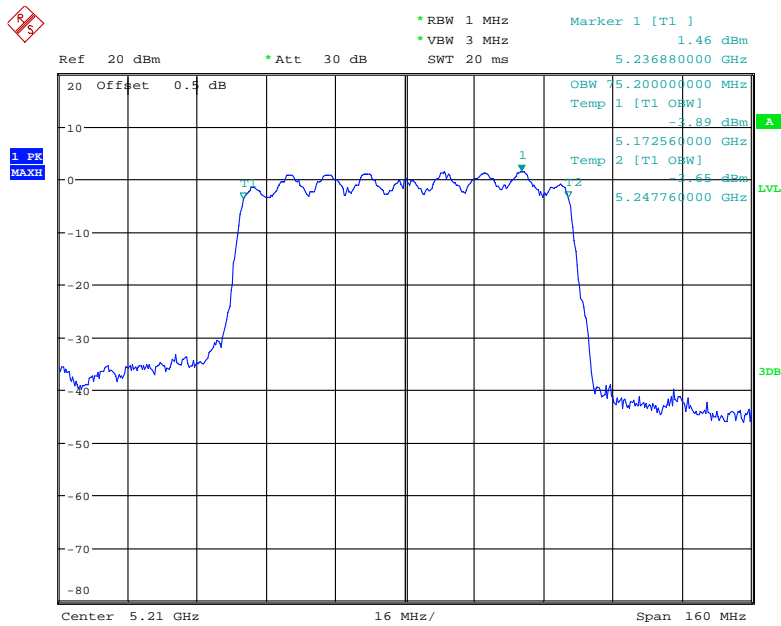
Date: 16.DEC.2017 16:18:36

802.11n ht40 High Channel



Date: 16.DEC.2017 16:20:50

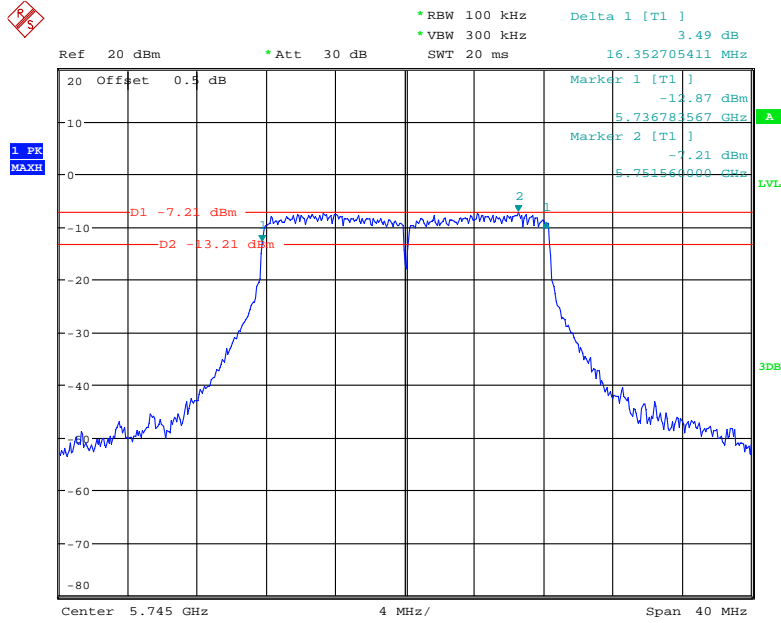
802.11ac80 Middle Channel



Date: 16.DEC.2017 16:22:44

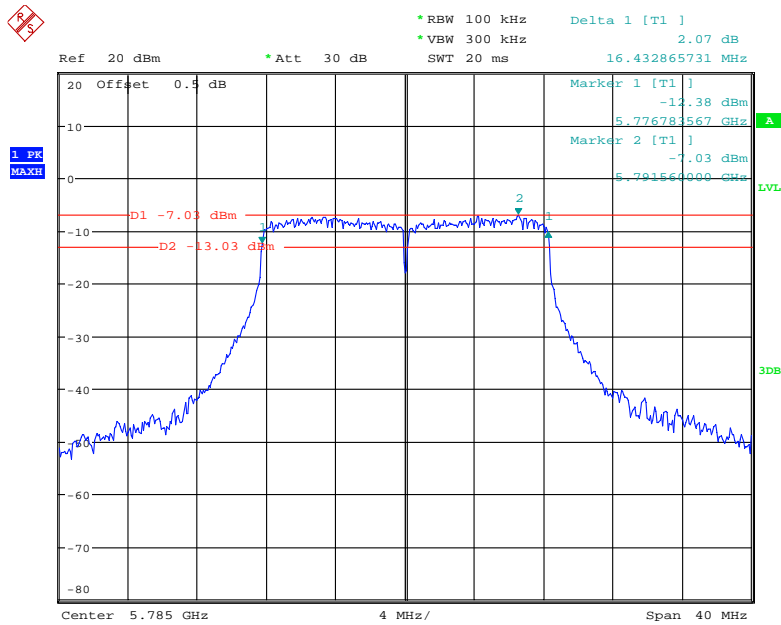
5725-5850MHz:
6dB Bandwidth:

802.11a Low Channel



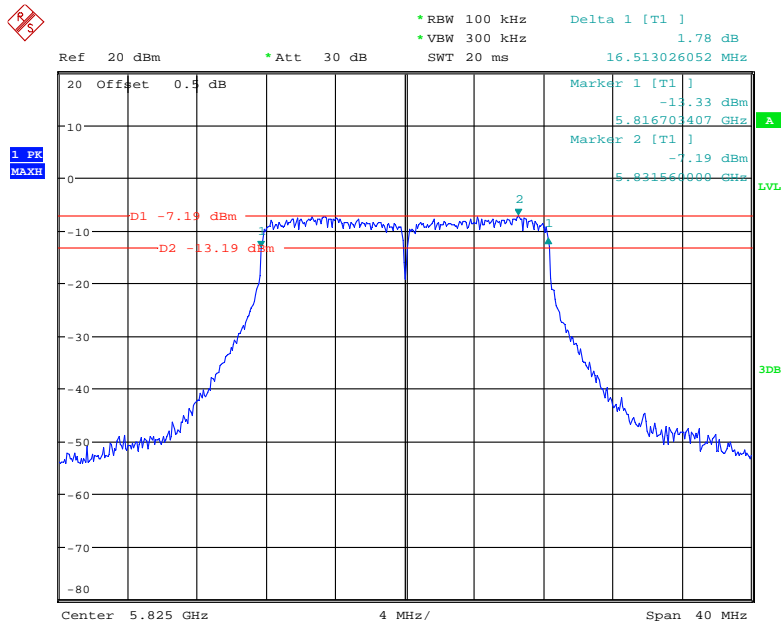
Date: 16.DEC.2017 16:30:34

802.11a Middle Channel



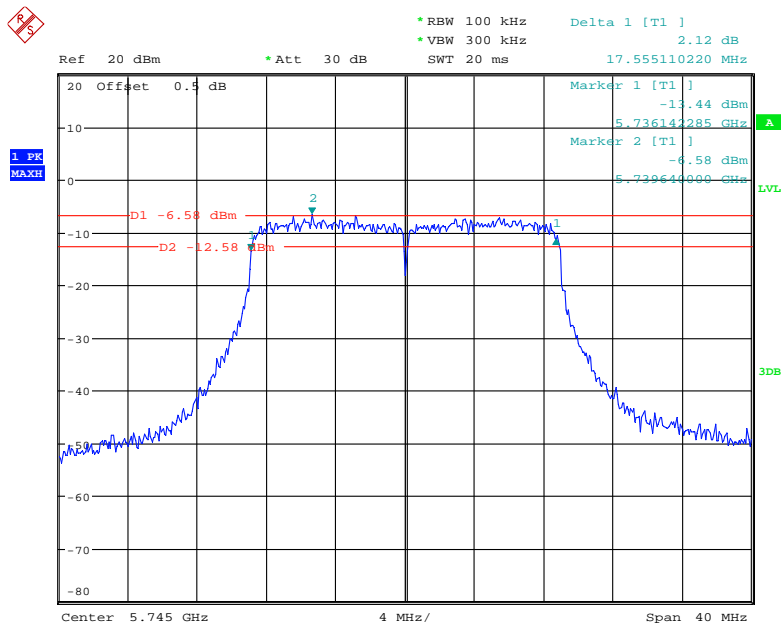
Date: 16.DEC.2017 16:34:08

802.11a High Channel



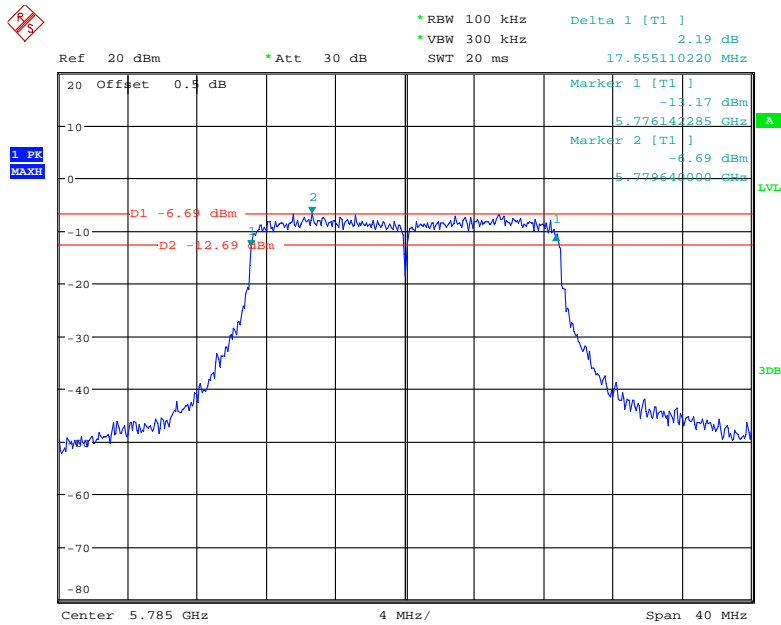
Date: 16.DEC.2017 16:35:50

802.11ht20 Low Channel



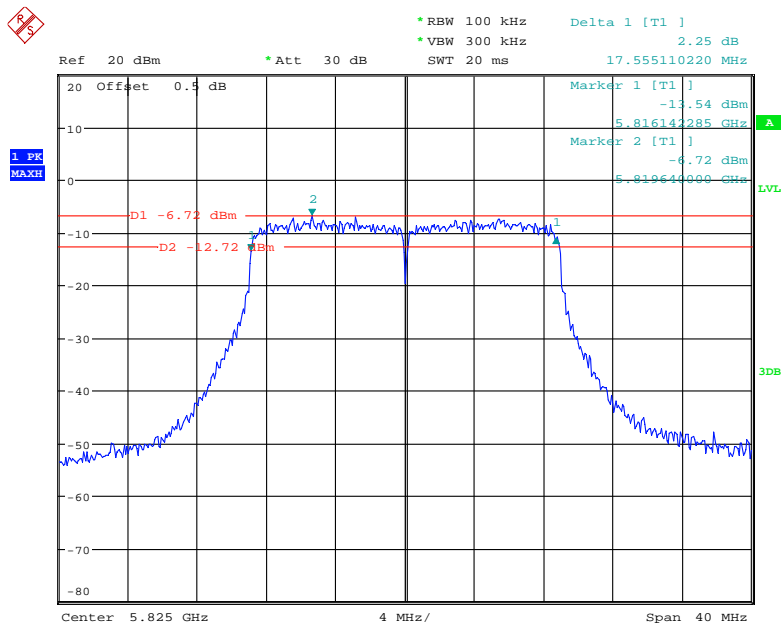
Date: 16.DEC.2017 16:55:13

802.11ht20 Middle Channel



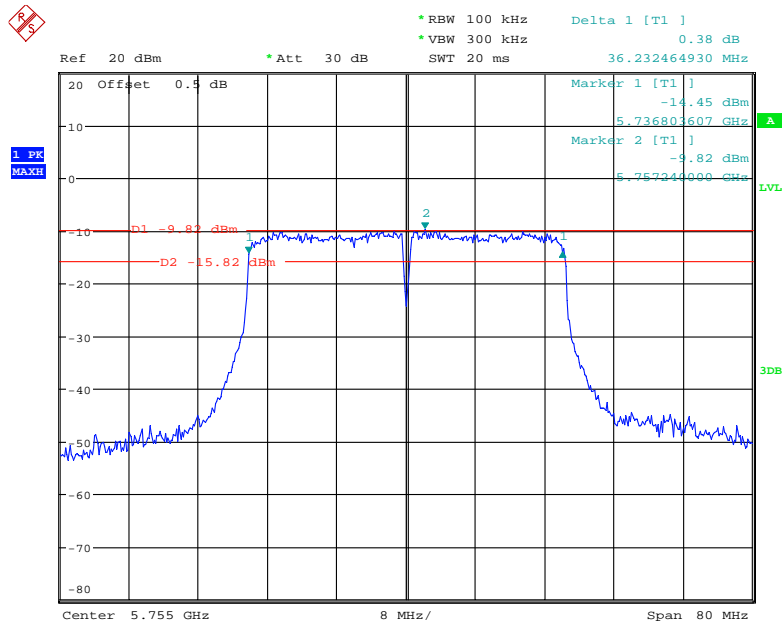
Date: 16.DEC.2017 16:39:58

802.11ht20 High Channel



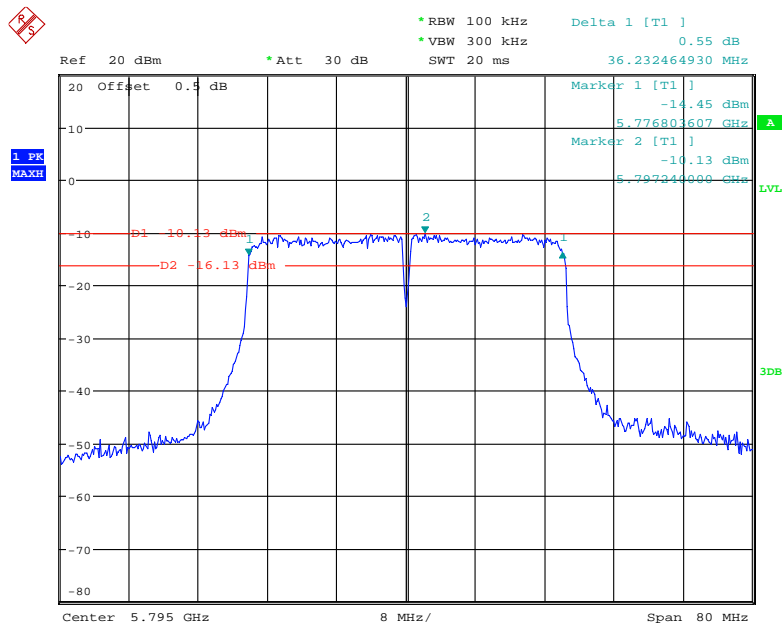
Date: 16.DEC.2017 16:37:56

802.11ht40 Low Channel



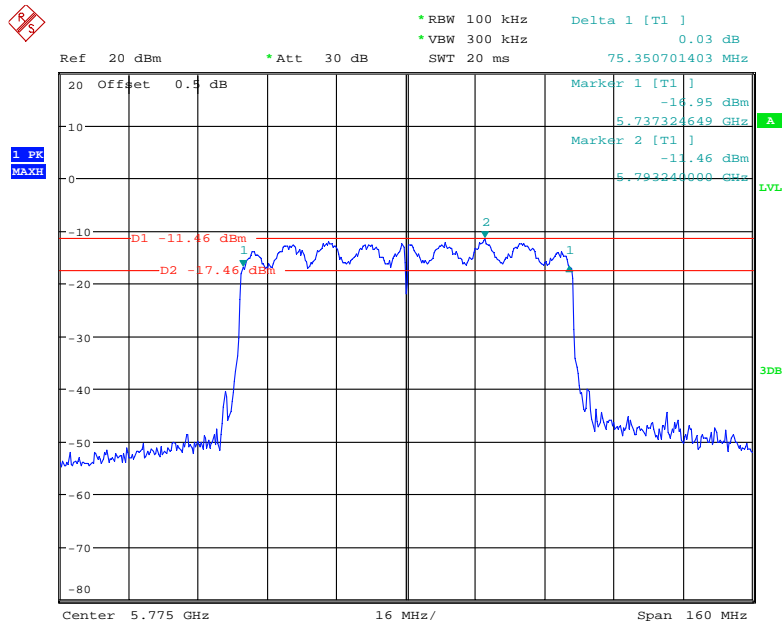
Date: 16.DEC.2017 16:46:14

802.11ht40 High Channel



Date: 16.DEC.2017 16:48:26

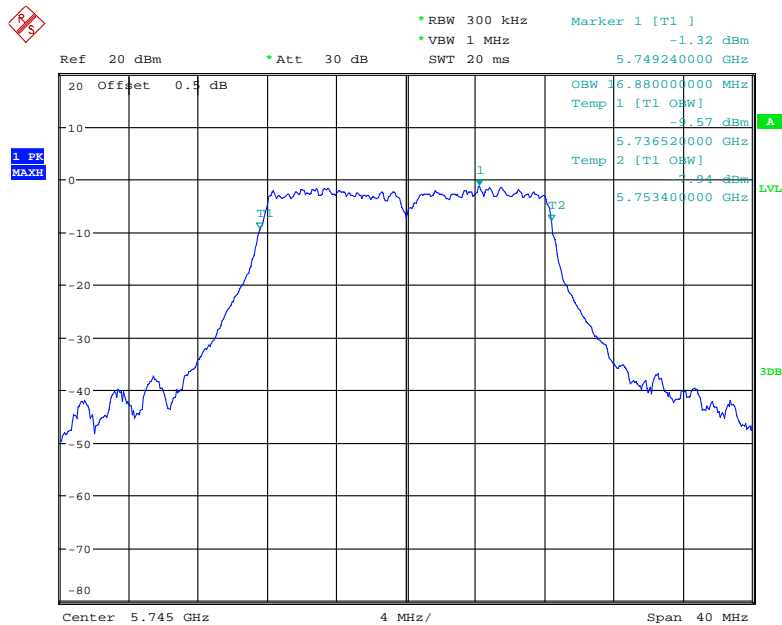
802.11ac80 Middle Channel



Date: 16.DEC.2017 16:50:47

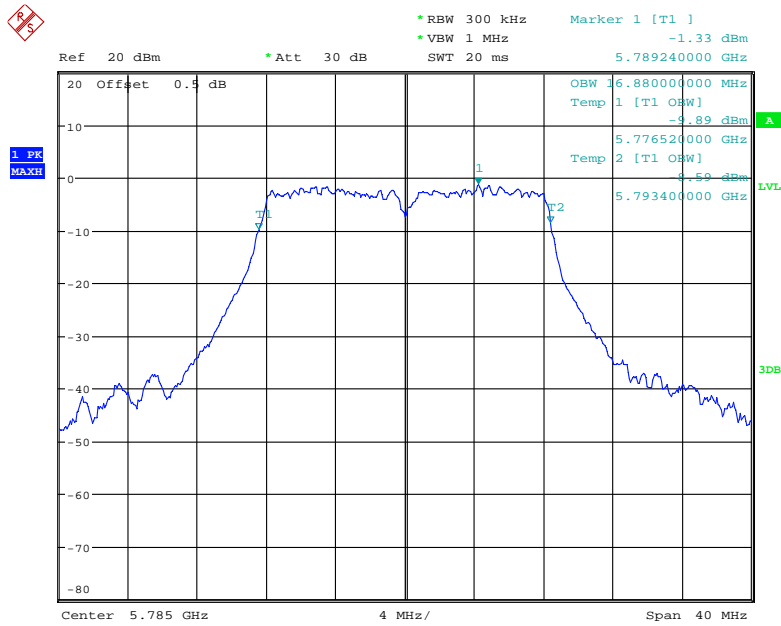
99% Occupied Bandwidth:

802.11a Low Channel



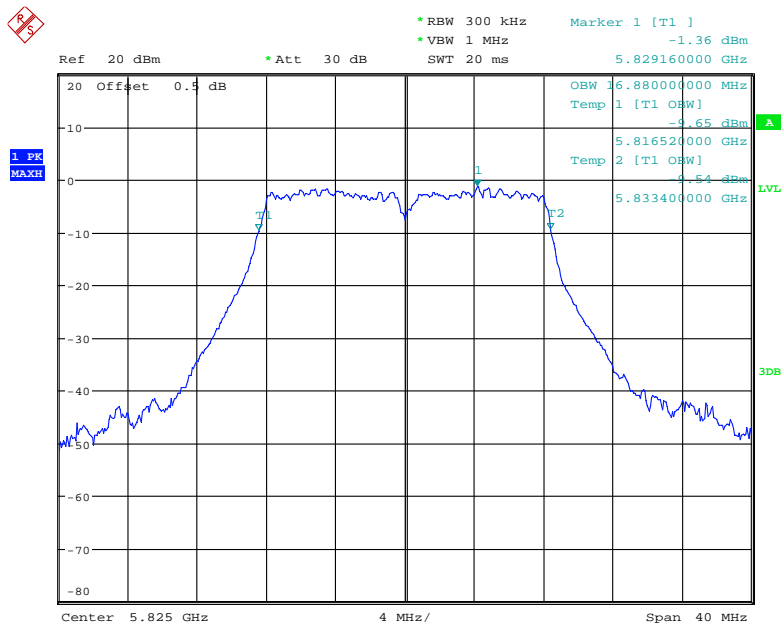
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802.11a Middle Channel



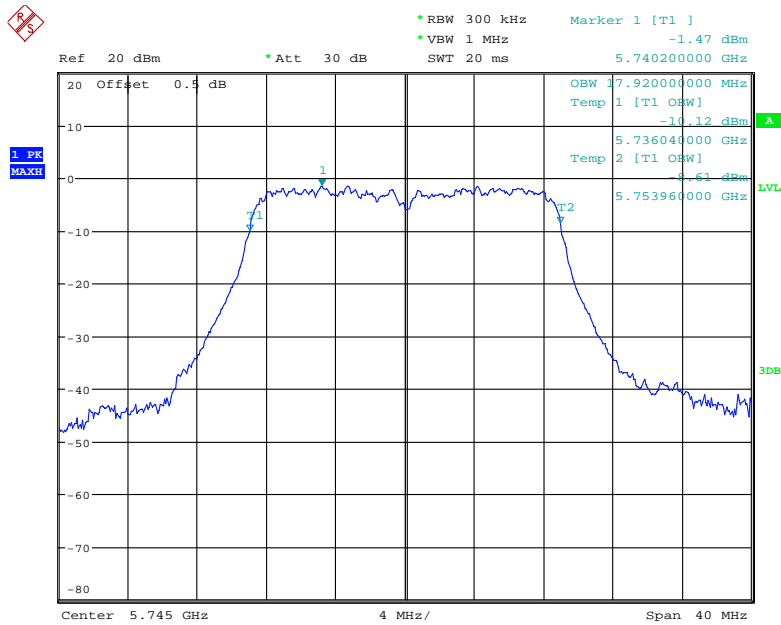
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802.11a High Channel



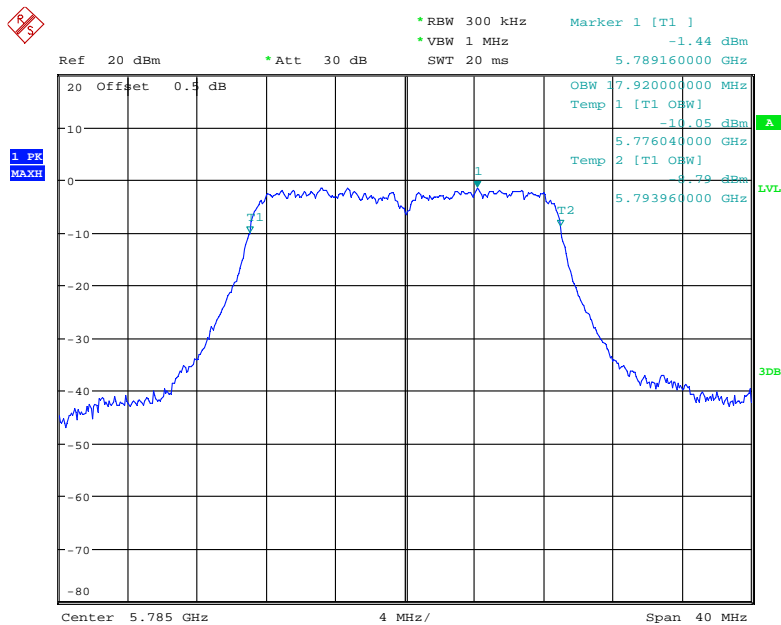
Date: 16.DEC.2017 16:36:02

802.11ht20 Low Channel



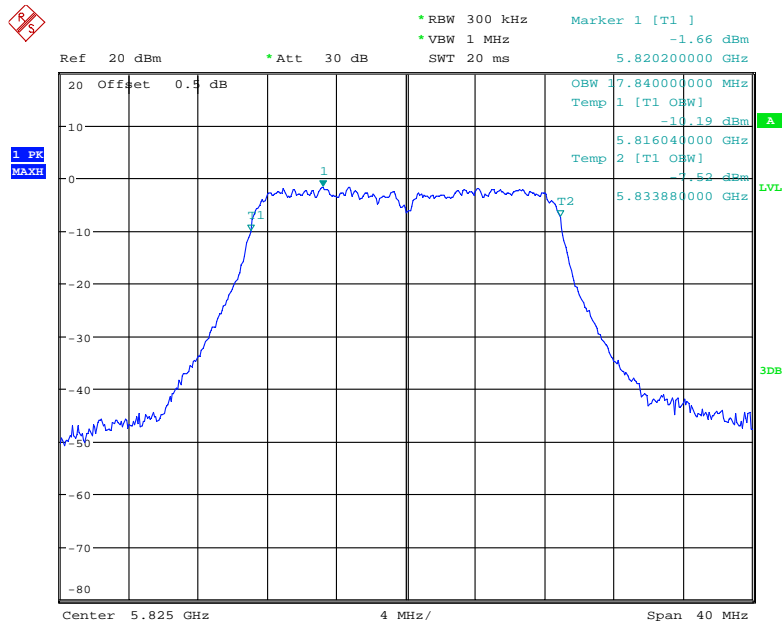
Date: 16.DEC.2017 16:55:25

802.11ht20 Middle Channel



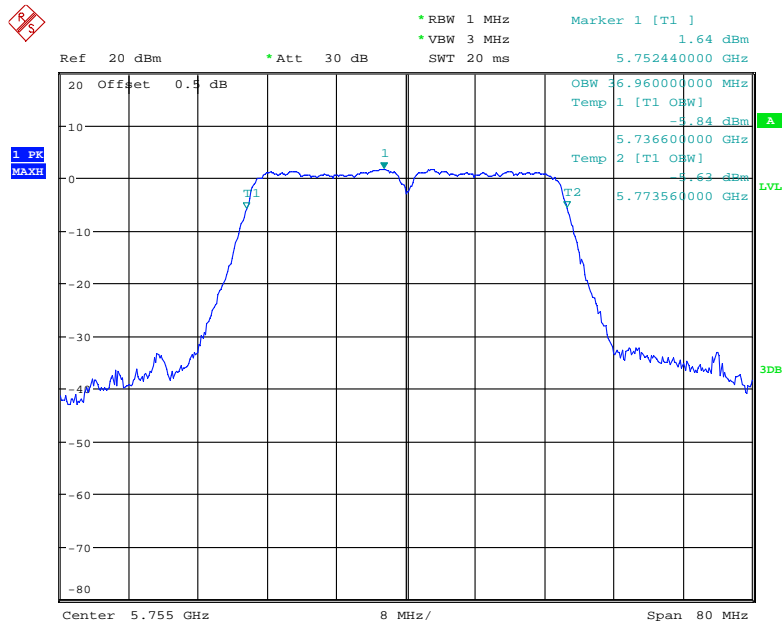
Date: 16.DEC.2017 16:40:10

802.11ht20 High Channel



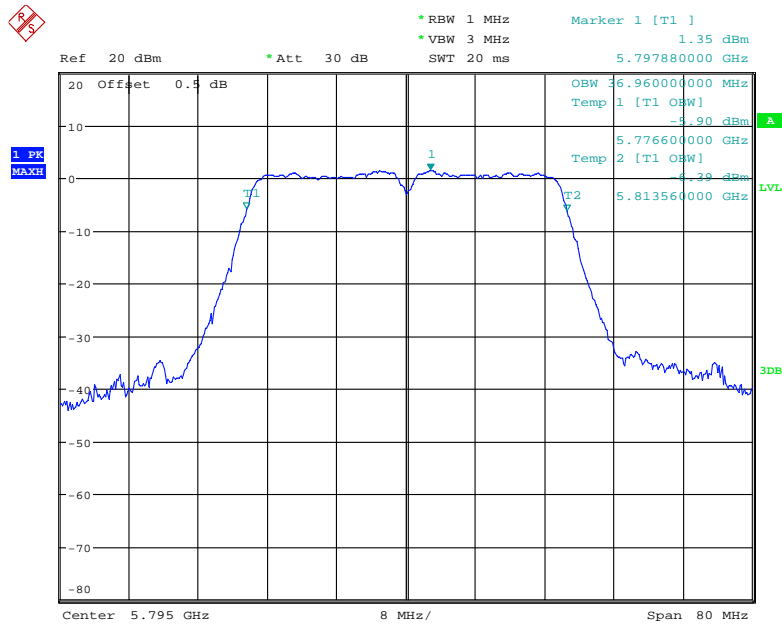
Date: 16.DEC.2017 16:38:08

802.11ht40 Low Channel



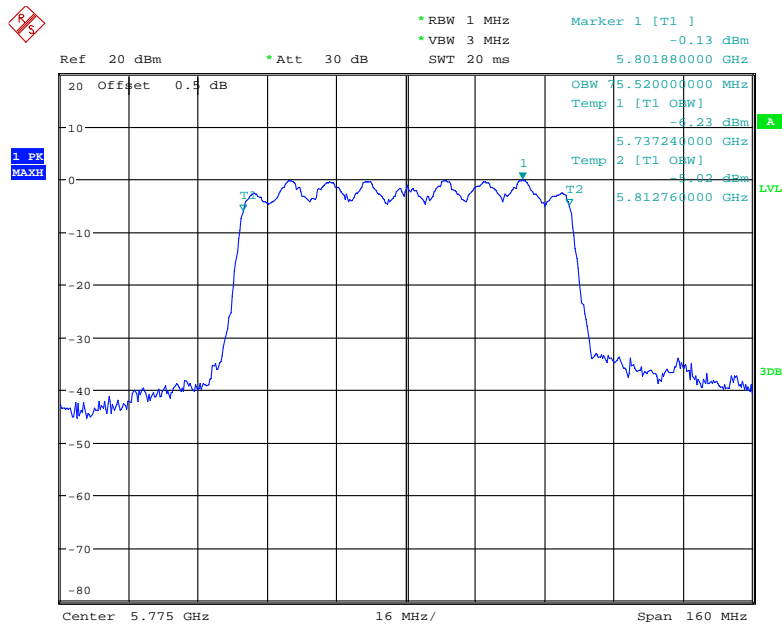
Date: 16.DEC.2017 16:46:26

802.11ht40 High Channel



Date: 16.DEC.2017 16:48:38

802.11ac80 Middle Channel



Date: 16.DEC.2017 16:50:59

FCC §15.407(g)–FREQUENCY STABILITY

Applicable Standard

FCC §15.407(g)

(g) Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the users manual.

Test Procedure

According to ANSI C63.10-2013 “American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices”.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU 26	200256	2017-12-08	2018-12-08
N/A	Coaxial Cable	C-SJ00-0010	C0010/04	Each Time	/
UNI-T	Multimeter	UT39A	M130199938	2017-05-09	2018-05-09
Dongzhixu	High Temperature Test Chamber	DP1000	201105083-4	2017-09-10	2018-09-09

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	25.3 °C
Relative Humidity:	35 %
ATM Pressure:	102 kPa

* *The testing was performed by George Pang on 2017-12-16.*

Test Mode: Transmitting

Test Result: Pass.

5150-5250MHz:

802.11a

Temperature	Voltage	f _L at Low Test Channel	F _H at High Test Channel	Limit
°C	V _{DC}	MHz	MHz	
0	5	5171.5	5248.4	f _L and f _H Within 5150~5250MHz range
10		5171.49	5248.2	
20		5171.46	5248.1	
30		5171.52	5248.36	
40		5171.48	5248.29	

802.11n ht20:

Temperature	Voltage	f _L at Low Test Channel	F _H at High Test Channel	Limit
°C	V _{DC}	MHz	MHz	
0	5	5171.12	5248.96	f _L and f _H Within 5150~5250MHz range
10		5171.14	5248.95	
20		5171.22	5248.91	
30		5171.19	5248.94	
40		5171.18	5248.93	

802.11n ht40:

Temperature	Voltage	f _L at Low Test Channel	F _H at High Test Channel	Limit
°C	V _{DC}	MHz	MHz	
0	5	5171.6	5211.6	f _L and f _H Within 5150~5250MHz range
10		5171.58	5211.58	
20		5171.56	5211.56	
30		5171.53	5211.55	
40		5171.51	5211.51	

802.11ac80:

Temperature	Voltage	f _L at Low Test Channel	F _H at High Test Channel	Limit
°C	V _{DC}	MHz	MHz	
0	5	5172.56	5247.76	f _L and f _H Within 5150~5250MHz range
10		5172.53	5247.73	
20		5172.59	5247.75	
30		5172.55	5247.73	
40		5172.51	5247.72	

Note: the f_L and f_H determined by 99% Occupied bandwidth low edge at Low test channel and High edge at High test channel.

5725-5850MHz:

802.11a

Temperature	Voltage	f _L at Low Test Channel	F _H at High Test Channel	Limit
°C	V _{DC}	MHz	MHz	
0	5	5736.52	5833.4	f _L and f _H Within 5725~5850MHz range
10		5736.49	5833.43	
20		5736.47	5833.41	
30		5736.45	5833.37	
40		5736.41	5833.34	

802.11n ht20:

Temperature	Voltage	f _L at Low Test Channel	F _H at High Test Channel	Limit
°C	V _{DC}	MHz	MHz	
0	5	5736.04	5833.88	f _L and f _H Within 5725~5850MHz range
10		5736.02	5833.91	
20		5736.16	5833.84	
30		5736.08	5833.82	
40		5736.11	5833.84	

802.11n ht40:

Temperature	Voltage	f _L at Low Test Channel	F _H at High Test Channel	Limit
°C	V _{DC}	MHz	MHz	
0	5	5736.6	5813.56	f _L and f _H Within 5725~5850MHz range
10		5736.54	5813.5	
20		5736.51	5813.55	
30		5736.42	5813.53	
40		5736.39	5813.51	

802.11ac80:

Temperature	Voltage	f _L at Low Test Channel	F _H at High Test Channel	Limit
°C	V _{DC}	MHz	MHz	
0	5	5737.24	5812.76	f _L and f _H Within 5725~5850MHz range
10		5737.21	5812.76	
20		5737.26	5812.74	
30		5737.22	5812.76	
40		5737.21	5812.74	

Note: the f_L and f_H determined by 99% Occupied bandwidth low edge at Low test channel and High edge at High test channel.

FCC §15.407(a) –MAXIMUM CONDUCTED OUTPUT POWER

Applicable Standard

(a) Power limits:

(1) For the band 5.15-5.25 GHz.

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(3) For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(4) The maximum conducted output power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	Wideband Power Sensor	N1921A	MY54210016	2017-11-03	2018-11-03
Agilent	Wideband Power Sensor	N1921A	MY54170013	2017-11-03	2018-11-03
Agilent	P-Series Power Meter	N1912A	MY5000448	2017-11-03	2018-11-03
N/A	Coaxial Cable	C-SJ00-0010	C0010/04	Each Time	/

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Procedure

According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01

Test Data

Environmental Conditions

Temperature:	25.3 °C
Relative Humidity:	35 %
ATM Pressure:	102 kPa

* The testing was performed by George Pang on 2017-12-16.

Test Mode: Transmitting

UNII Band	Mode	Frequency (MHz)	Conducted Average Output Power (dBm)	Limit (dBm)	Result
5150-5250 MHz	802.11 a	5180	6.94	24	PASS
		5200	7.45	24	PASS
		5240	7.07	24	PASS
	802.11ht20	5180	6.35	24	PASS
		5200	6.44	24	PASS
		5240	6.53	24	PASS
	802.11ht40	5190	7.39	24	PASS
		5230	7.18	24	PASS
	802.11 ac80	5210	7.41	24	PASS
	5725-5850 MHz	802.11 a	5745	5.23	30
5785			5.13	30	PASS
5825			5.15	30	PASS
802.11ht20		5745	5.41	30	PASS
		5785	5.28	30	PASS
		5825	5.16	30	PASS
802.11ht40		5755	5.68	30	PASS
		5795	5.45	30	PASS
802.11 ac80		5775	6.03	30	PASS

Note: the EUT is a client device.

FCC §15.407(a) - POWER SPECTRAL DENSITY

Applicable Standard

(a) Power limits:

(1) For the band 5.15-5.25 GHz.

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(2) For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or $11 \text{ dBm} + 10 \log B$, where B is the 26 dB emission bandwidth in megahertz. In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output

power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(3) For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. In addition, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. However, fixed point-to-point U-NII devices operating in this band may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter conducted power. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple collocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

Test Procedure

According to KDB 789033 D02 General UNII Test Procedures New Rules v02r01

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU 26	200256	2017-12-08	2018-12-08
N/A	Coaxial Cable	C-SJ00-0010	C0010/04	Each Time	/

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	25.3 °C
Relative Humidity:	35 %
ATM Pressure:	102 kPa

* *The testing was performed by George Pang on 2017-12-16.*

Test Mode: Transmitting

Test Result: Compliance. Please refer to the following table and plot.

5150-5250MHz

Mode	Frequency (MHz)	Power Spectral Density (dBm/MHz)	Limits (dBm/MHz)
802.11 a	5180	-1.91	11
	5200	-2.11	11
	5240	-1.93	11
802.11 ht20	5180	-2.67	11
	5200	-2.59	11
	5240	-2.51	11
802.11 ht40	5190	-4.87	11
	5230	-5.08	11
802.11 ac80	5210	-6.57	11

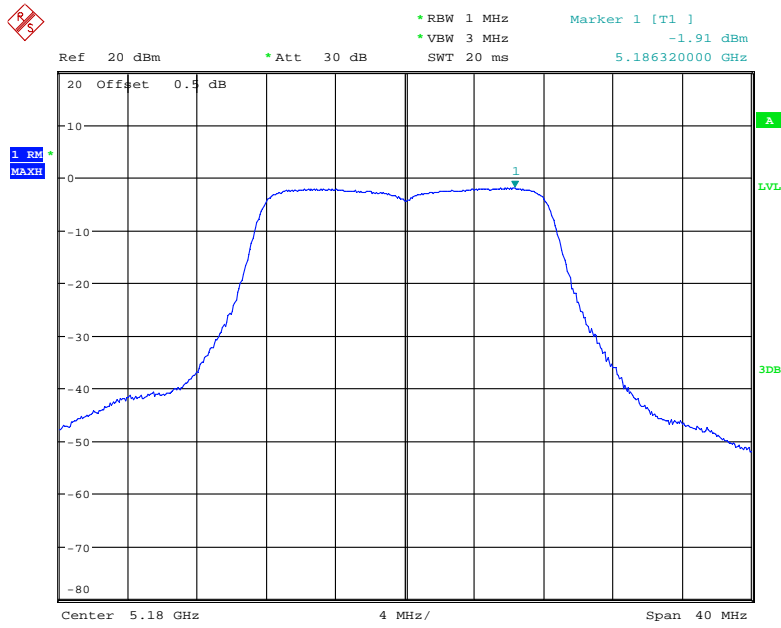
5725-5850MHz

Mode	Frequency (MHz)	Reading (dBm/300kHz)	Power Spectral Density (dBm/500kHz)	Limit (dBm/500kHz)
802.11 a	5745	-8.00	-5.79	30
	5785	-8.36	-6.05	30
	5825	-8.05	-5.95	30
802.11 ht20	5745	-8.01	-8.65	30
	5785	-8.27	-8.88	30
	5825	-8.17	-10.31	30
802.11 ht40	5755	-10.87	-5.78	30
	5795	-11.1	-6.14	30
802.11 ac80	5775	-12.53	-5.83	30

Note: For 5.8GHz band, If measurement bandwidth of Maximum PSD is specified in 500 kHz, add $10\log(500\text{kHz}/\text{RBW})$ to the measured result, whereas RBW (< 500 KHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.

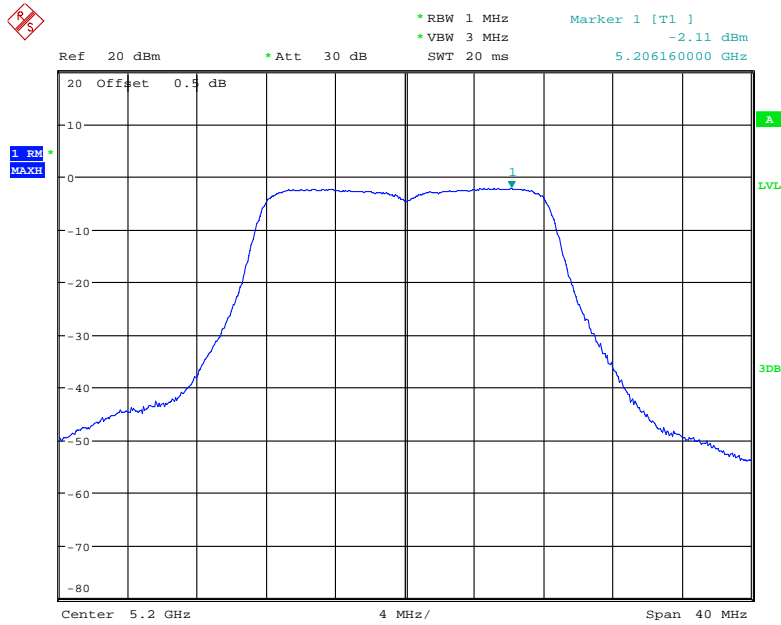
5150-5250MHz

802.11a Low Channel



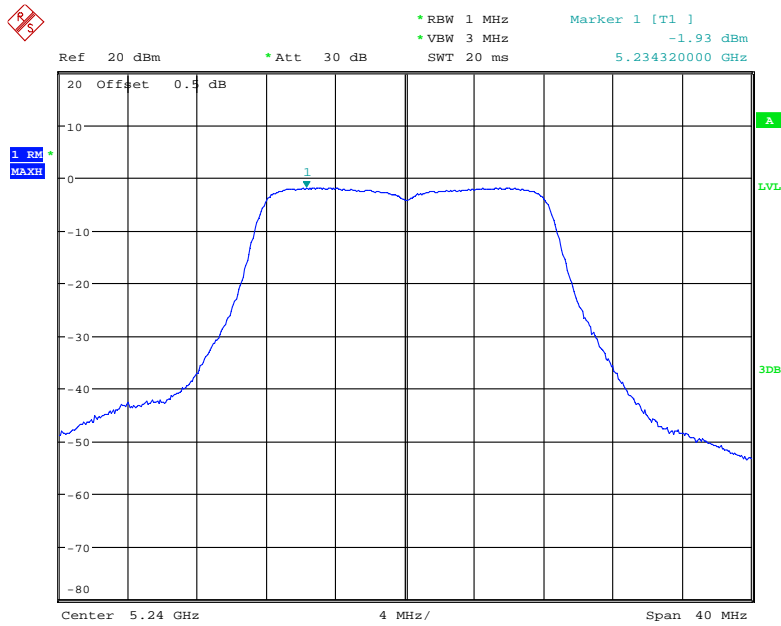
Date: 16.DEC.2017 16:06:10

802.11a Middle Channel



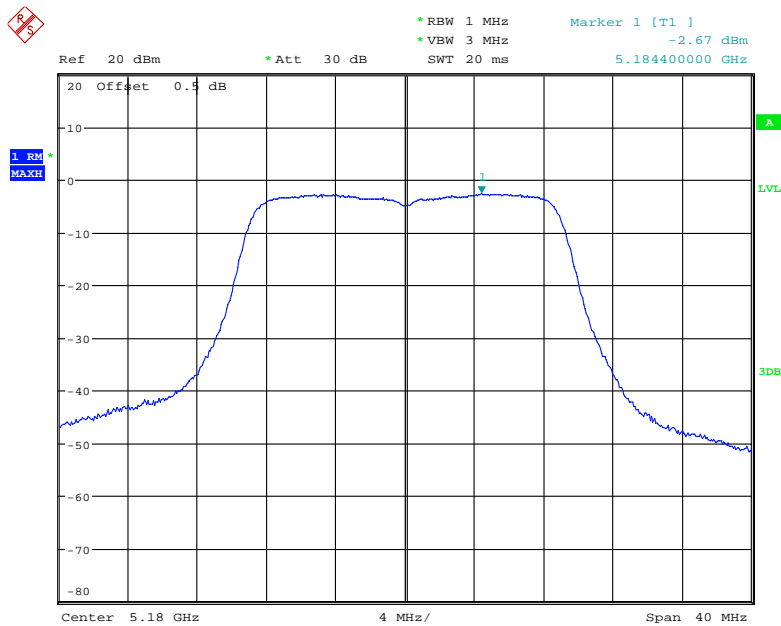
Date: 16.DEC.2017 16:07:58

802.11a High Channel



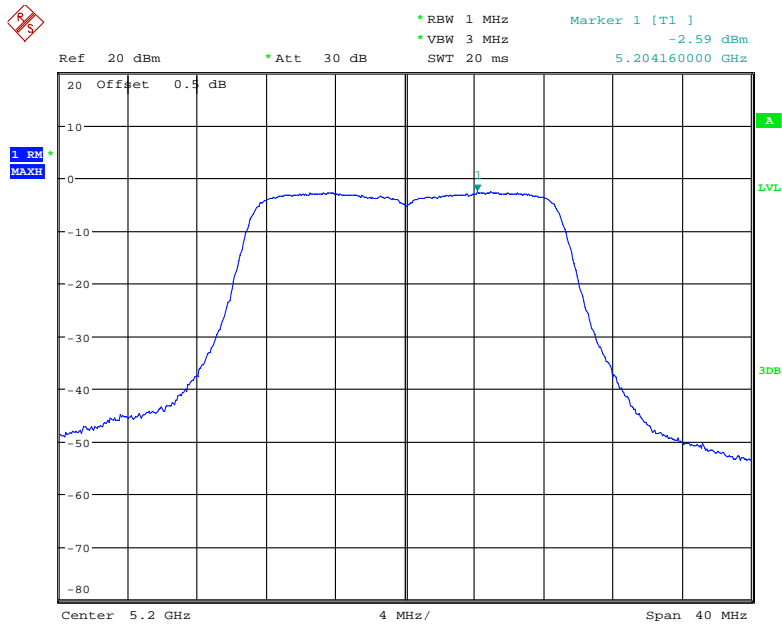
Date: 16.DEC.2017 16:09:50

802.11n ht20 Low Channel



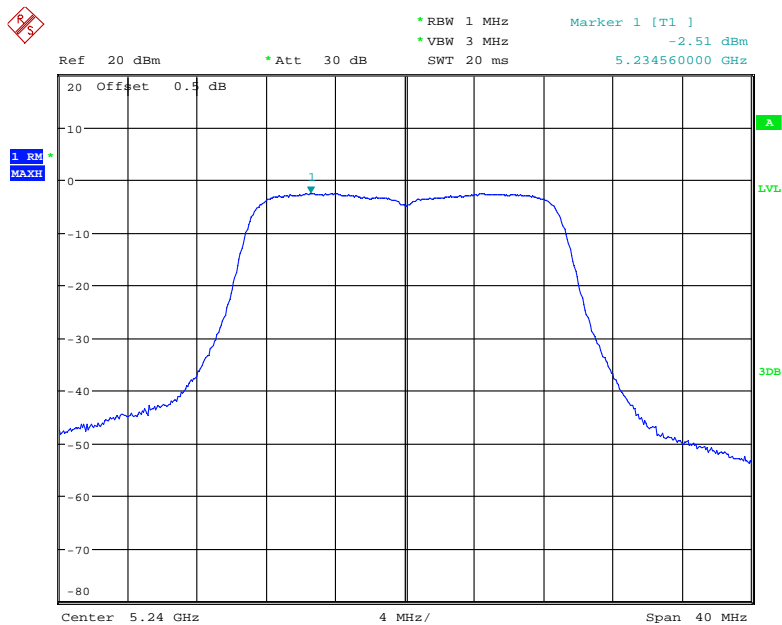
Date: 16.DEC.2017 16:16:07

802.11n ht20 Middle Channel



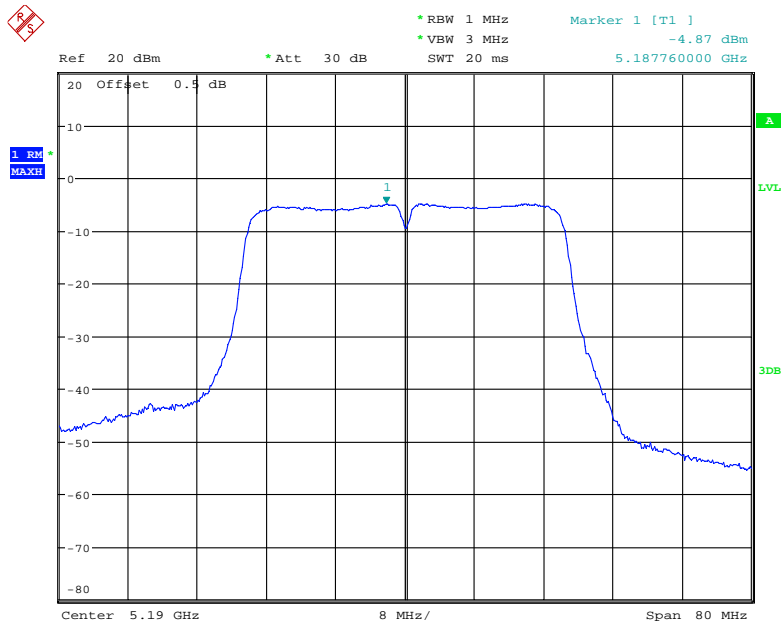
Date: 16.DEC.2017 16:14:35

802.11n ht20 High Channel



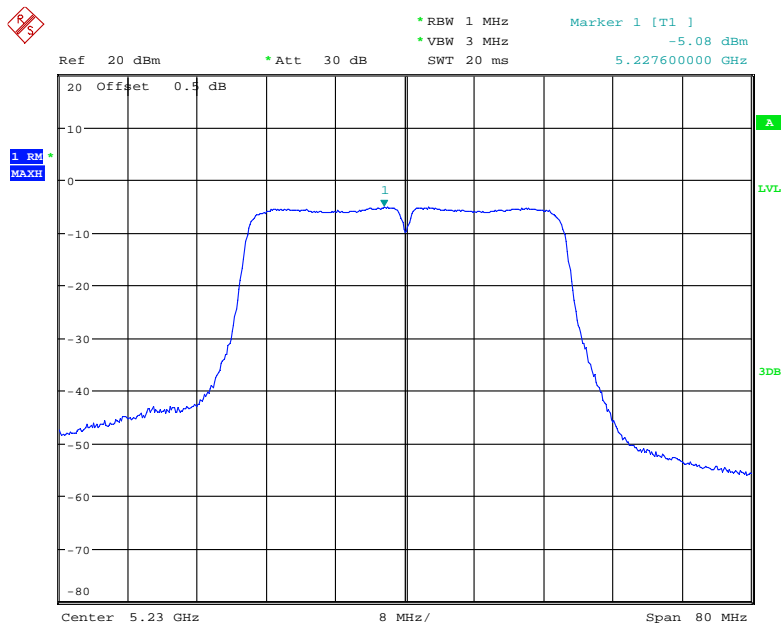
Date: 16.DEC.2017 16:12:54

802.11n ht40 Low Channel



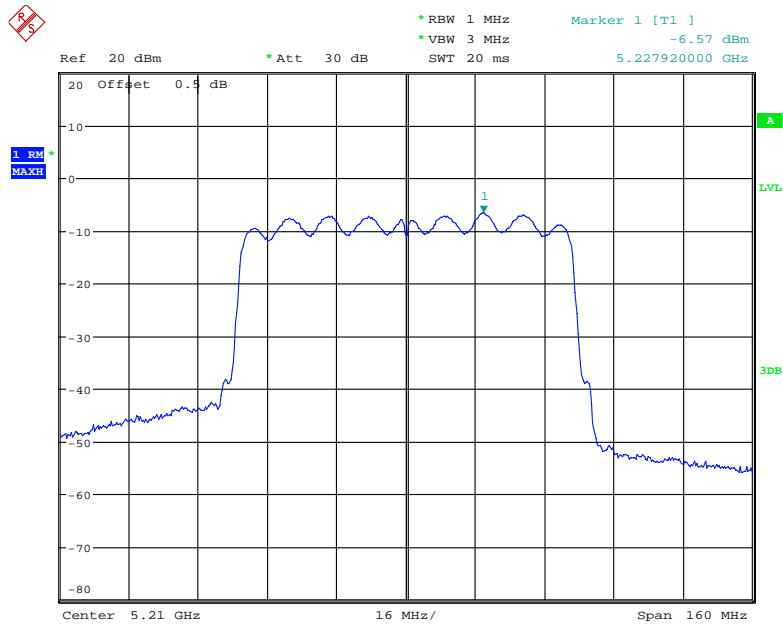
Date: 16.DEC.2017 16:18:56

802.11n ht40 High Channel



Date: 16.DEC.2017 16:21:10

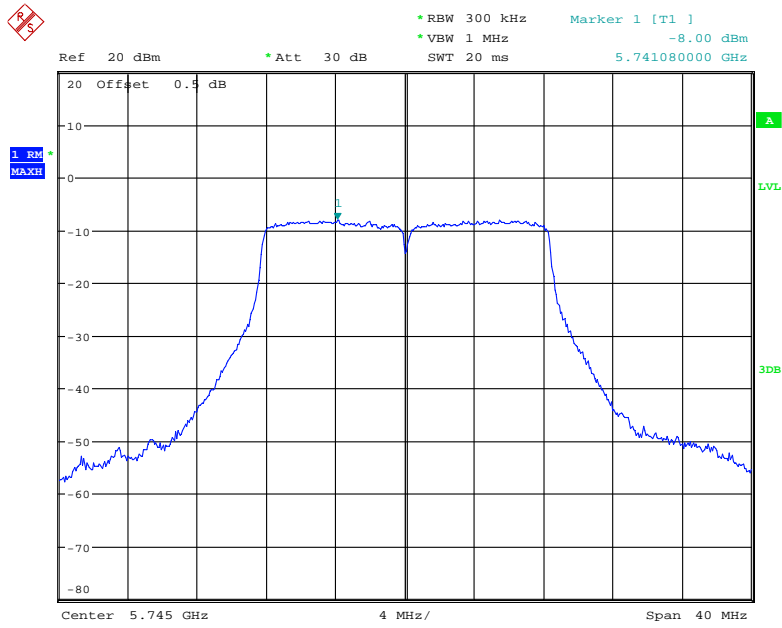
802.11ac80 Middle Channel



Date: 16.DEC.2017 16:23:09

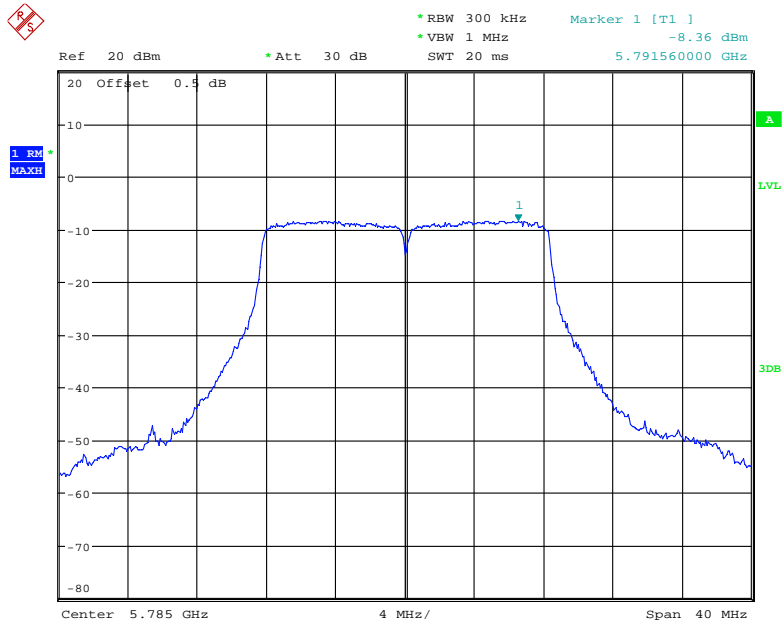
5725-5850MHz

802.11a Low Channel



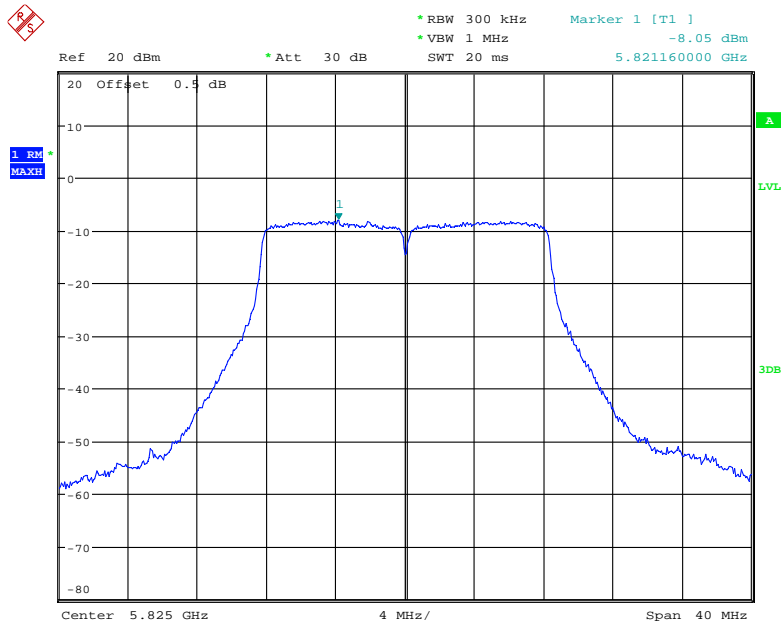
Date: 16.DEC.2017 16:31:07

802.11a Middle Channel



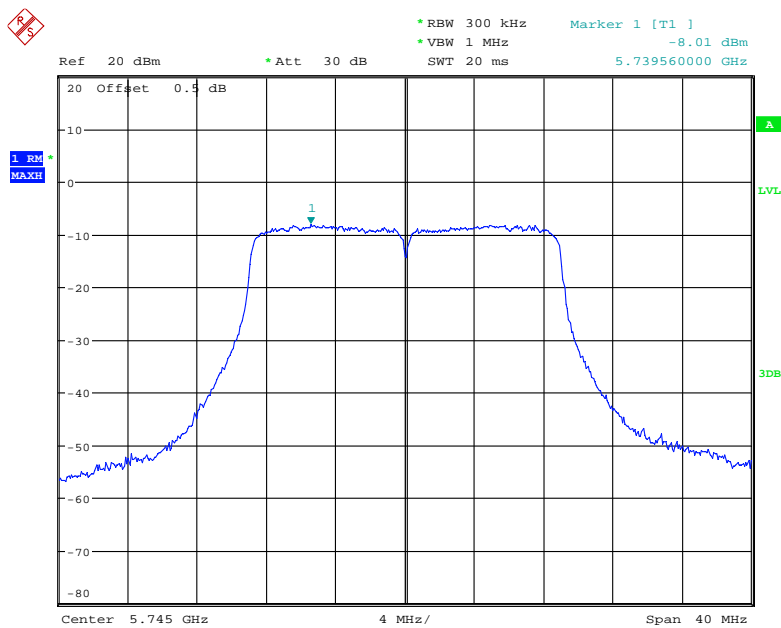
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802.11a High Channel



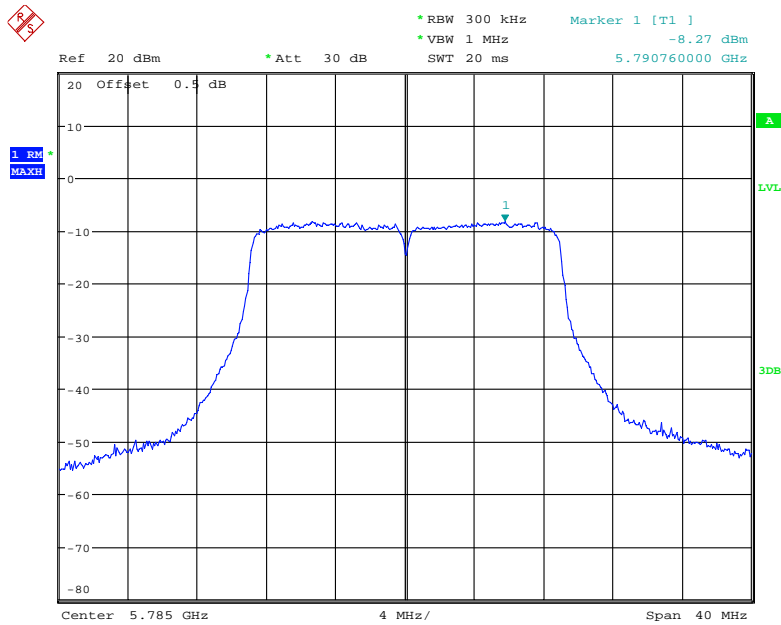
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802.11n ht20 Low Channel



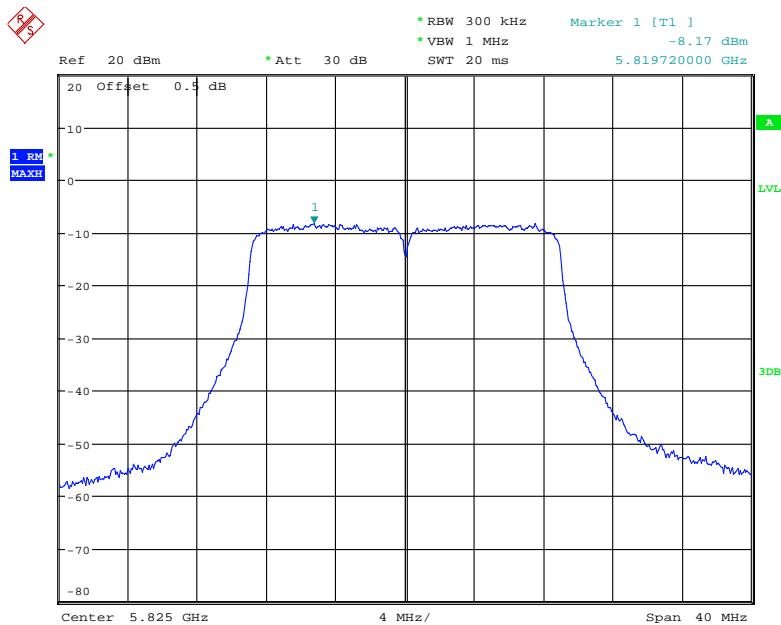
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802.11n ht20 Middle Channel



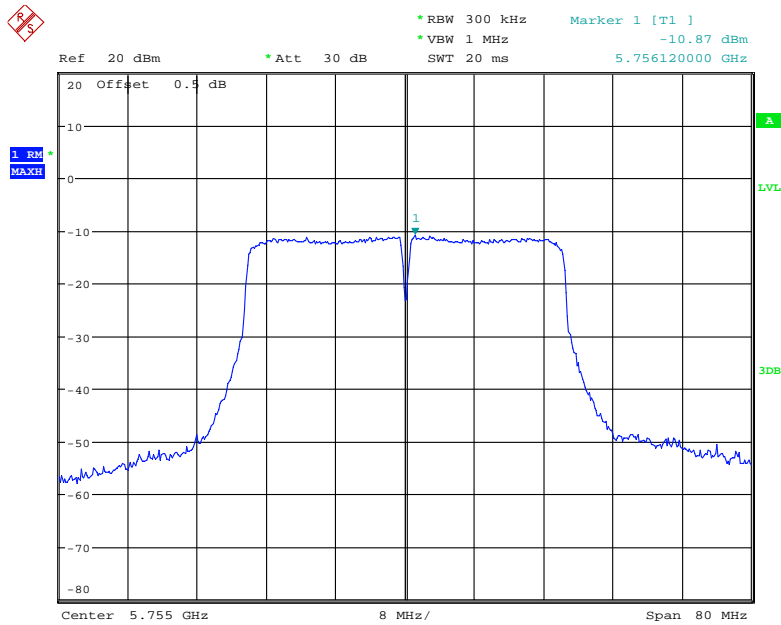
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802.11n ht20 High Channel



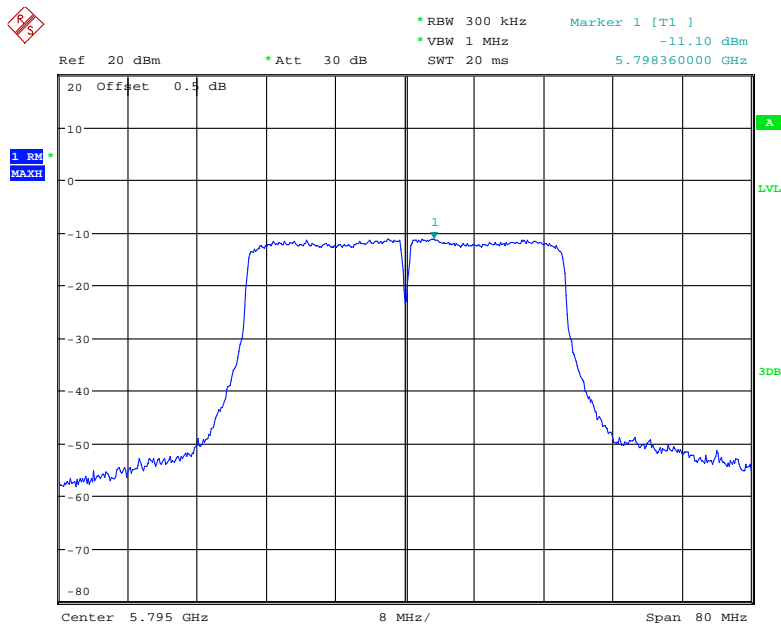
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802.11n ht40 Low Channel



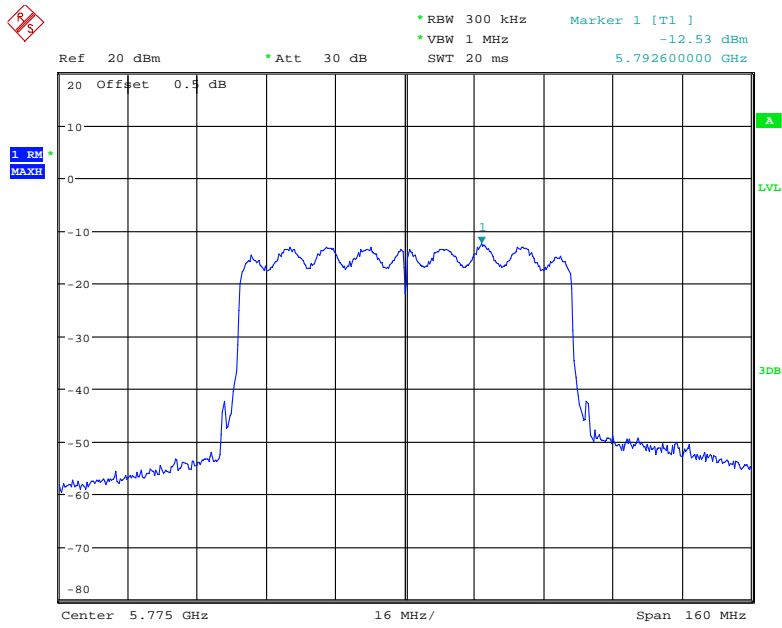
Date: 16.DEC.2017 16:46:46

802.11n ht40 High Channel



Date: 16.DEC.2017 16:48:58

802.11ac80 Middle Channel



Date: 16.DEC.2017 16:51:25

***** END OF REPORT *****